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THE

Montreal Medical Journal

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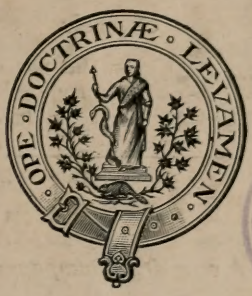
Biological & Medical Serials



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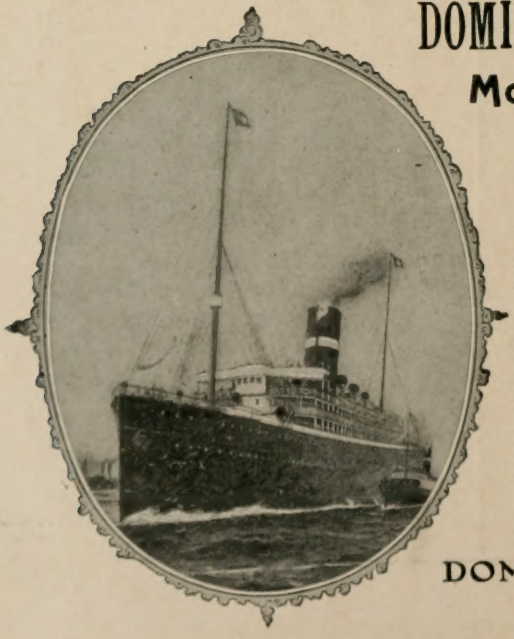

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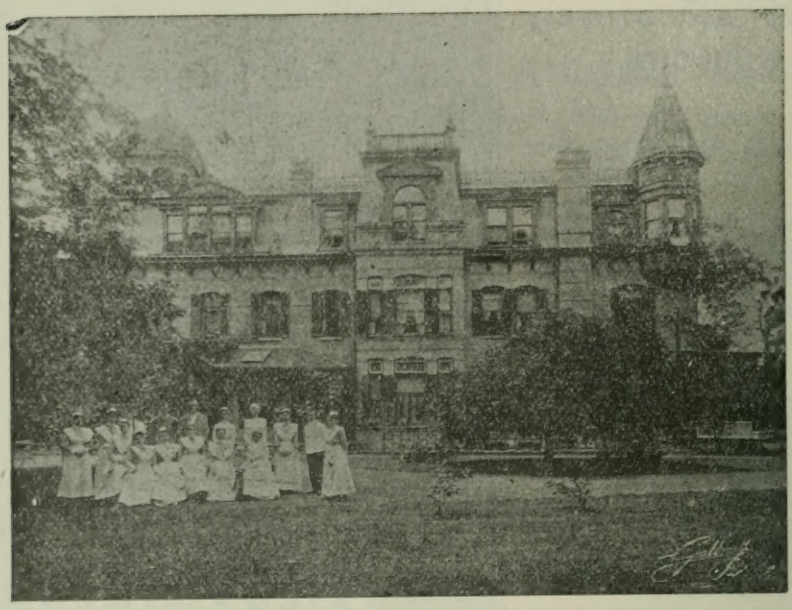

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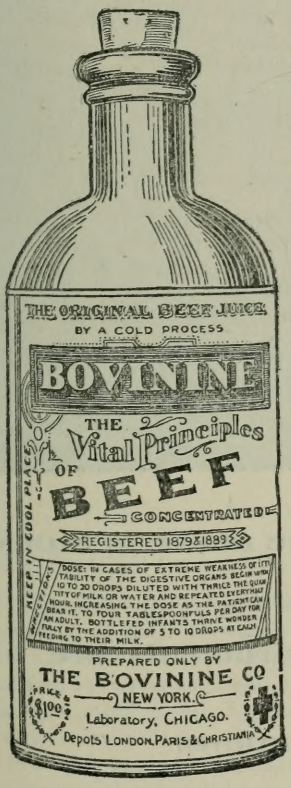
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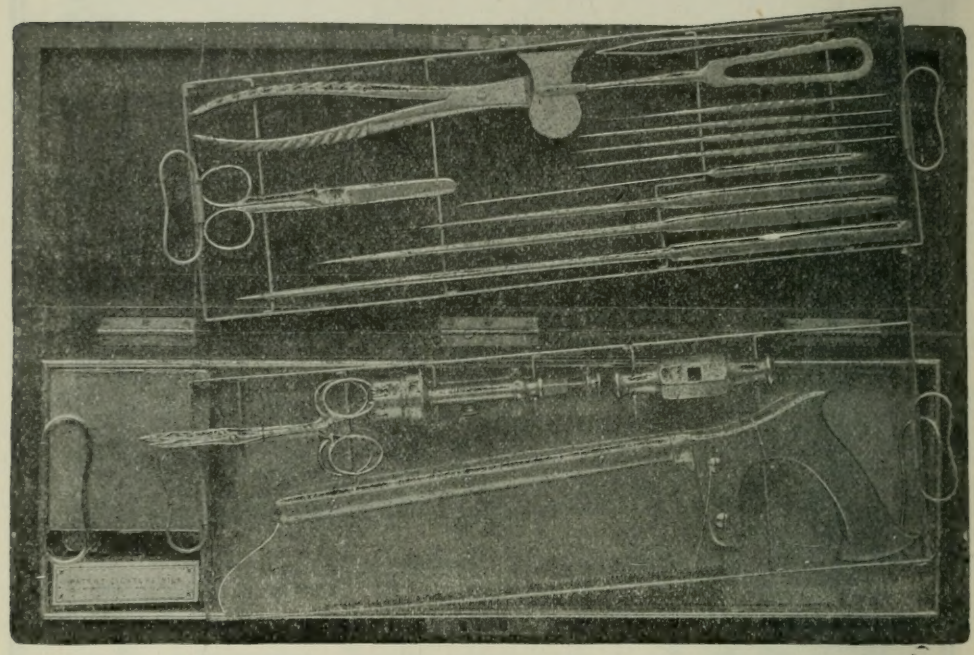

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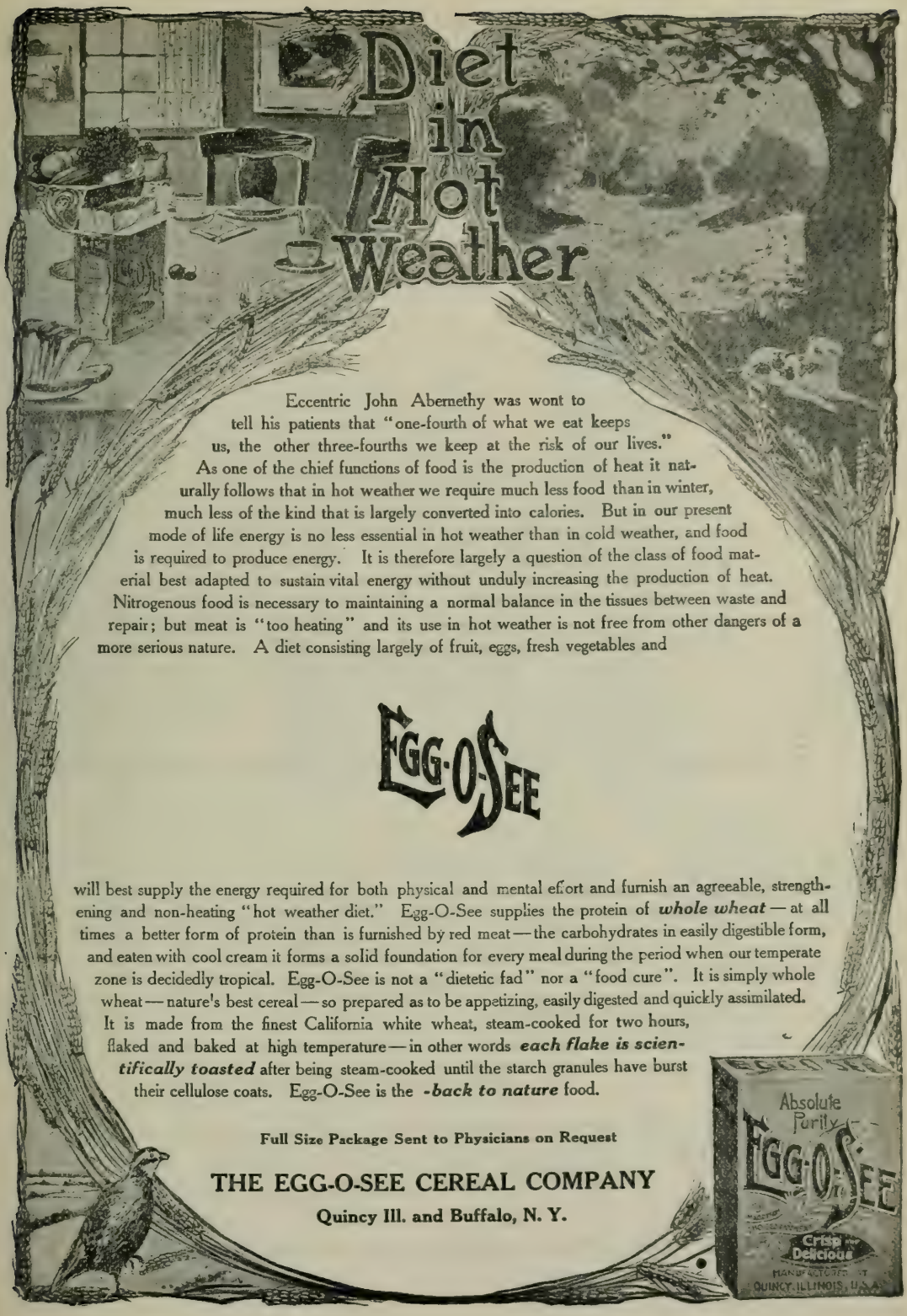

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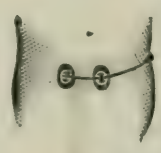

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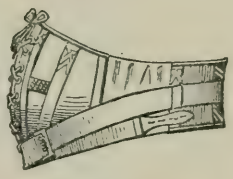

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Montreal Medical Journal

A Monthly Record of the Progress of Medical and Surgical Science.

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VOL. XXXV. JULY, 1906. No. 7.

PULMONARY ABSCESS AND GANGRENE.

BY

RIDLEY MACKENZIE, M.D.,

Out-Patient Physician, Montreal General Hospital; Lecturer Clinical Medicine, McGill University, Montreal.

This paper is based on the analysis of eight cases of Gangrene of the Lung from the available clinical reports of the Montreal General Hospital, and three cases in my private practice. I have also collected fourteen clinical reports of Abscess of the Lung from the same service. It was my intention to confine my paper to the subject of Gangrene of the Lung, but the intimate connexion between Abscess of the Lung and Gangrene of the Lung made it necessary to make a joint study of the two conditions.

Both abscess and gangrene are rare diseases. In the Pathological Records of the Montreal General Hospital, covering twenty-five hundred autopsies in twenty-eight years,—I found records of nine cases of Gangrene of the Lung, and of Abscess of the Lung there are but eighteen. These records go back to 1877. Dr. Osler reports the first case, one of gangrenous tissue, about a phthisical cavity. In 1620 autopsies at the Middlesex Hospital, London, there were seven examples of gangrene, and Withington found and discussed thirty-six cases of abscess and gangrene of the lung in the service of the Boston City Hospital for eighteen years.

Abscess invariably precedes the gangrene. Gangrene is never a primary affection, its commonest precursors are certain diseases of the lung, namely, pneumonia, phthisis, broncho-pneumonia, peribronchitis, bronchitis, especially putrid bronchitis, foreign bodies such as particles of food, coins. Other rarer causes are pulmonary embolism, traumatism, and gangrene may even be metastatic in origin.

The implantation of saphrophytic bacteria upon soil made receptive by these causes rsults in softening and necrosis accompanied by putre-

faction, when, in addition, the resistance of the body is reduced by want, alcoholism or diabetes.

These saphrophytic bacteria cannot alone produce gangrene, but are usually associated with some other organisms generally a pyogenic coccus, streptococcus, staphylococcus and a virulent pneumococcus. Other observers have found in the secretion from gangrene, spirilla from the mouth, the bacillus of malignant œdema, and one resembling the bacillus coli communis. The leptothrix pulmonalis was once thought to be the cause of gangrene, but the idea is now discarded.

Two forms of pulmonary gangrene are recognized, the circumscribed and the diffuse. Laennec first accurately described pulmonary gangrene, and his classification still exists. He looked upon it as a rare disease, and thought it approached the nature of the idiopathic gangrenes, such as anthrax, malignant pustule and pestilential bubo. He classified abscess of the lung under pneumonia, and stated that no organic lesion was more uncommon than a real collection of pus in the substance of the lung. Gangrene is more common in the right lung, and in the lower lobe, and in the outer portion of the lung, rather than in the centre. In the cases studied I found this to be true, with the exception that the focus was more frequently in the upper lobe. In abscess of the lung it followed the usual distribution. Gangrene tends to form a cavity with ragged irregular walls. Surrounding the gangrenous focus is an area of intense congestion and the lung beyond is œdematous. The pulmonary pleura is usually coated with a layer of fibrin. In some cases profuse hæmorrhage may occur from the destruction of tissue and the laying open of vessels. In the series of cases I have collected there were two examples of this condition. This description applies to the diffuse form of gangrene which is less common than the circumscribed, but may follow the latter. In the circumscribed form the destruction of tissue is not so widespread, and the resulting cavities are more sharply defined. Coincident with both these forms is an intense bronchitis, due to the irritation caused by the ichorous decomposing material, which is the source of much of the sputum. Abscess of the lung, when solitary, may attain the size of a lobe. If evacuation of the contents has taken place during life, the walls may be gangrenous and the contents fœtid. If the mass be small and the patient in good condition a fibroid protecting wall may form, which, from within outwards, consists of a layer of necrotic lung and inflammatory tissue, a layer of solidified lung infiltrated with leucocytes and young connective-tissue cells and œdematous lung tissue. (Coplin).

Embolic abscesses are common and are often wedge-shaped. Delafield and Prudden described this form of abscess as involving the walls of the air spaces, originally through the transposition by the blood vessels of various forms of bacteria, especially the streptococcus and staphylococcus pyogenes. They call it pneumonia of hematogenous origin, or pyæmic pneumonia resulting in abscess of the lung. Abscess may be due to perforation of the lung from without. Pulmonary tuberculosis, at some time in its course, usually becomes a mixed infection with the development of abscess cavities and symptoms of a septic process. Abscess of the lung may be single or double, the latter being invariably pyæmic in origin.

Gangrene of the lung presents great varieties in its onset, acute or very gradual, associated with fever and local thoracic symptoms and often not pronounced, and only found at autopsy. (Strümpell).

Definite symptoms of local pulmonary disease precede the characteristic features of both gangrene and abscess followed by aggravation of the symptoms and the characteristic sputum. Strümpell gives a good description of the sputum. He says: "The penetrating stench of the sputum is most striking, a most repulsive, putrid odour infecting the whole vicinity." It separates if placed in a conical glass, into three layers, a greenish-brown, heavy sediment with plugs of tissue, an intervening thin liquid, and a frothy, thick layer on top. Microscopically, bits of destroyed lung tissue are found, also elastic tissue fibres, with granular matter, pigment grains, fatty crystals, leucin and tyrosin, cholesterin and the various pyogenic and saphrophytic bacteria. The odour is communicated to the breath. There are differences of opinion as to the presence of elastic tissue fibres as a guide to diagnosis. Strümpell and Osler hold that it is always present. Traube thought the gangrenous process destroyed the elastic tissue, and Eigkman has shewn that certain bacteria evolve an elastic tissue dissolving enzyme, and it is possible that the disappearance of elastic tissue in pulmonary gangrene may be attributable to the action of some such substance. The typical sputum of abscess of the lung is pure creamy pus, without marked odour, but this varies, depending upon the emptying and refilling of the cavity and the development of an odour. It contains elastic tissue fibres and hæmatodin crystals.

Physical Signs:—Examination, as a rule, permits one to make out the site of the nodule, much depending upon the situation and extent of the gangrene. An infiltration of any size will cause dulness on percussion with bronchial breathing and mucous rales. If a gangrenous cavity has formed, signs of cavitation will be present, sometimes the

physical signs are due to the accompanying pleurisy with its distinctive features. The signs of pneumothorax may be present when rupture has taken place. Flouroscopic examination may help to localize the focus, much depending upon the situation. Fever is a very variable element in both gangrene and abscess, depending upon the absorption of septic material. When the gangrenous nodule is sequestered and when the secretion can be freely emptied through the bronchi and no absorption, fever may be absent; as a rule it is of septic type ranging as high as 104 and accompanied by chills.

The Differential Diagnosis:—The affections which simulate both gangrene and abscess are: 1st. Bronchiectasis. In this case the sputum has some of the same characteristic features minus the elastic tissue and the absence of fever.

2nd. Putrid Bronchitis. Strümpell states that putrid bronchitis and gangrene often run into each other without any sharp boundary.

3rd. Rupture of an empyæma into the lung. The differential diagnosis between a ruptured empyæma will be the sudden expectoration of a large quantity of purulent sputum, possibly fœtid, but not gangrenous.

4th. Putrefactive changes in the walls or contents of a tubercular cavity which can only be distinguished by the presence of the bacillus of tuberculosis.

The course of abscess and gangrene, when unsuccessfully treated, is that the patients pass into a marantic state and often die of exhaustion, septicæmia, the rupture of a blood vessel or broncho-pneumonia.

Treatment:—Guaiacol has been used successfully as a pulmonary antiseptic. Lop reports three recoveries by the subcutaneous use of guaiacol, and oil of almonds, sterilized at 100°, two grammes used one to four times daily.

Traube recommends the use of ½ gram. of acetate of lead, every two hours. Osler considers the medical treatment very unsatisfactory, and recommends the inhalation of carbolic acid or guaiacol; he says the same of abscess. Undoubtedly, if one is able to define the focus, surgical treatment is the only satisfactory course to pursue.

Of the 11 cases of gangrene, the clinical reports shew that eight were males and three were females. They were all in the middle period of life, 25 to 56 years of age.

There was a history of inebriety in four, and two were epileptics. There was no evidence of diabetes in any.

Of these cases five died. One recovered without operation, four were operated upon with complete recovery, and one left the hospital unimproved. This shows a mortality of 45 per cent.

A compilation of statistics give 80 per cent. mortality when treated medically, 40 per cent. when treated surgically, medical statistics including those unfit to withstand operation. Withington gives 16 per cent. of recoveries, including both diseases.

The cases now reported were treated medically with stimulating and supporting treatment, inhalation of formaline 1-3000, eucalyptus, creosote and terebene, with creosote given internally in dose of 10 minims, three times a day, and a mouth wash of permanganate of potash.

Case I, 1893.—Service of Dr. Wilkins: Male, aged 25. An alcoholic subject. He had been ill six months before admittance. Three weeks before coming to the hospital he had recurring chills. On examination, dulness over the left apex in front and behind was found, and signs of cavitation with friction rub. The expectoration was profuse, thick and bloody. There is no report as to the microscopical examination of the sputum. He was treated medically, and died ten days after admittance.

Autopsy:—Anteriorly in middle zone of upper lobe a large gangrenous cavity was found with reddish-grey pus communicating with a bronchus; pleura thickened, and adherent over cavity. In this case the diagnosis had to be made from the autopsy report.

Case II:—Male, aged 47, marble cutter, 1894. Service of Dr. Finley. He had been in the hospital twenty years previously, for four months with cough and expectoration. Four months previous to admittance, after exposure to cold, the cough was increased and the expectoration became fœtid, accompanied by chills and fever. On admittance patient was very weak. The right subclavicular area was dull, with signs of cavity on the left side. A dull area at back from fourth to ninth dorsal spine was found with signs of cavity. Characteristic sputum, 10 to 15 ozs. a day, three layers, greenish, with elastic tissue. Mixed bacilli, and stearic acid crystals; no bacilli of tuberculosis. The odour of the sputum, and the patient's breath was indescribable, the present writer remembering it well, being house physician at the time. He had daily chills. Temperature 96 to 103 4-5. He was treated with inhalations of creosote and a carbolic spray used, but the patient failed rapidly and died ten days after admittance.

Autopsy.—Firm pleuritic adhesions were found, with a small gangrenous cavity in the right apex. In the lower lobe, behind, a small cavity was found, surrounded by a consolidated area.

The history of this case, from its chronic character, suggests bronchiectatic cavities orginally, becoming gangrenous later on.

Case III.—Female, aged 39, 1897. Service of Dr. Finley. Patient gave a history of inflammation of the lungs. A year following this

the expectoration became profuse and very fœtid, accompanied by severe pain. Examination shewed signs of cavity in left apex in front. Sputum not reported on, breath horribly fœtid. Patient died 24 hours after admittance.

Autopsy:—Gangrene of both lungs, putrid pleurisy, dissecting pneumonia.

Case IV:—Male, aged 56. Service of Dr. Finley. No history of alcoholism; no definite onset. Examination revealed dulness and rales at the left base posteriorly, sputum muco-purulent, greenish, very offensive, typical three layers, no report as to elastic tissue. Treated with inhalations of creosote and discharged improved.

Case V:—Male, aged 38. Service of Drs. Lafleur and Armstrong. He was a hard drinker and subject to fits. Six months previous to admittance, following a prolonged spree, he developed a severe pain in the side and began expectorating blood-stained greenish sputum. The present writer saw him in the out-patient department and made a diagnosis of gangrene of the lung. He was transferred to the ward where the sputum was collected, and measured 20 to 25 ounces in twenty-four hours. It was characteristic in appearance, but there was no elastic tissue or tubercle bacilli. On examination a dull area over the left lung behind the 5th to the 8th rib with signs of cavity and friction rub. The temperature ranged from 101 to 103½. He was transferred to the surgical service and a cavity opened measuring 2½ by 2½ inches with smooth walls opening into a bronchus from the upper corner. The pleural surfaces were adherent. The cavity was drained and the patient made an excellent recovery.

The clinical history points to this being originally an aspiration pneumonia, his habits being such that this might occur. The absence of elastic tissue and the smooth walls of the cavity suggest bronchietasis, but the gangrenous odour of the sputum, the fever and the pleurisy point to its being gangrene.

Case IV:—Male, aged 33. Service of Drs. Molson and Armstrong. Patient an alcoholic, onset of illness ushered in with chills and rigors. Two months after this he had chills with profuse perspiration and fœtid expectoration. There were signs of consolidation in the right lung, but difficult to localize. The sputum had a gangrenous, offensive odour and contained elastic tissue. The patient was transferred to the surgical service and a rib re-sected, and exploring needle withdrew air and fluid from the pleural cavity. The pleura was not opened and the patient left the hospital well.

Case VII:—1903. Female, aged 36. Service of Dr. Blackader. Eight weeks previous to admittance condition began as a severe cold

with night sweats. Eight days before coming to hospital she expectorated foul-smelling pus. There were signs of consolidation at the right base with blowing breathing and rales. The sputum was not reported on. The patient died within 12 hours of admittance.

Autopsy.—Lobar-pneumonia was found with multiple gangrenous cavities in the right lung, and acute pleurisy.

Case VIII:—1903. Male, aged 48. Service of Drs. Finley and Armstrong. No history of alcohol or epilepsy. Initial illness came on with a chill followed by daily chills and night sweats. Signs of cavity at the base of the upper lobe of the left lung. Flouroscopic examination shewed a shadow in this region, and foul pus was withdrawn by the exploring needle. The sputum was described as frothy mucopurulent, and contained elastic tissue. The patient was transferred to the surgical service where, previous to operation, he expectorated 40 ounces of fœtid sputum. At the operation a large gangrenous cavity was explored and packed with gauze. The patient improved, but died suddenly a month later.

Autopsy Report.—Ulceration of the posterior left apex with erosion of a branch of the pulmonary artery.

Of my own series of cases the following is a record. Male, aged 45. Onset of illness, an alveolar abscess causing trismus. I administered ether to relax the jaw, and the removal of a tooth liberated a lot of foul smelling pus, and, a sub-maxillary abscess formed later which was opened. Three weeks later I saw him with a dry friction rub of the right side which improved after strapping. A week later a dull area developed with signs of consolidation and gangrenous expectoration. He was admitted into the Montreal General Hospital, where an exploratory aspiration was performed below the angle of the scapula and gangrenous pus was found. The expectoration was profuse and gangrenous, but contained no elastic tissue. He was transferred to the surgical service and a piece of the 9th rib excised. The pleura was much thickened. The pleural cavity was opened and the exploring finger passed into a space with smooth walls between the diaphragm and the lung filled with foul, almost fæcal matter. Drainage was established and later the sinus was irrigated with permanganate of potash and carbolic solutions; the patient declaring that he could taste the solution. He was profoundly septic. He was isolated; the expectoration ceased, and after a residence in the hospital for three months was discharged, and is now in perfect health. It was difficult to conceive a more desperate condition than this man was in. This case suggests an infection of the lungs, either by aspiration in administering the anæsthetic or by metastasis. The onset was slow, nearly a

month, the abscess cavity ruptured into the pleura; the opening of the cavity into the pleura must have been small to drain so slowly.

My second case, male, aged 26, developed symptoms after the administration of ether for operation for the relief of double hernia. At the time the patient had a bad ozena. Pneumonia with pleurisy developed two days later in the right lung behind. The expectoration, at first rusty, became fœtid and contained elastic tissue and pyogenic bacteria. An effusion into the right pleura developed, and I tapped the chest, withdrawing 20 ounces of straw-coloured fluid. At the end of the aspiration a dark, greenish horribly gangrenous discharge appeared mixed with air. The pleural cavity rapidly filled again, and the patient became profoundly septic, with delirium. Without an anæsthetic Dr. Hutchison incised an intracostal space, and inserted a large metal drainage tube and a great deal of dirty ichorous putrid fluid was drained away, the smell of which infected the whole hospital. The patient made a slow convalescence, the cough disappeared, and he is now perfectly well. This was a frank aspiration-pneumonia, becoming gangrenous, accompanied by pleurisy with rupture of the gangrenous abscess into the pleural cavity. I probably perforated the cavity with the needle. The thoracentesis was a last resort, and saved the patient, whose condition could not have been more desperate.

The third case of my service was a female, aged 26. Her illness commenced with an alveolar abscess in the upper jaw. The tooth was removed under an anæsthetic, the anæsthetic being prolonged preparing the teeth for bridge-work. A week later a pleuritic friction rub developed in the right axilliary region, followed by signs of consolidation with blowing breathing. This was accompanied by a whitish mucopurulent fœtid expectoration, but no elastic tissue. An effusion developed, and gangrenous pus was aspirated. Dr. Armstrong did a resection of the 9th rib liberating a large quantity of greenish gangrenous pus. The patient's condition was very bad, she was septic, with acute dilatation of the heart. The apex of the heart was in the anterior axillary line and the pulse not countable. Good drainage was secured, the expectoration ceased and the patient's convalescence was slow, but she is now quite well.

I look upon this case as one secondary to aspiration-pneumonia. The gangrenous abscess not being in direct communication with a bronchus; it was in the outer aspect of the lung, rupturing into the pleural cavity.

To summarize: Of the eleven cases of gangrene of the lungs, nine show a probable history of pneumonia. It is difficult to find the cause in the other two cases.

A detailed description of the 14 cases of abscess of the lung which I have studied, would exceed the limits of this paper. A summary must suffice.

Of the 14 cases, ten were males and four females, seven died. Two died after operation, one recovered after operation, one improved, and four left the hospital unimproved. This shows a mortality of 50 per cent. The ages range from 20 to 62. The patients were nearly all in the lower walks of life, and showed evidence of age, want or alcoholic excess, and long continued septic absorption. Elastic tissue in the sputum was found in half the cases.

A consideration of these cases teaches me that if the classification of these two diseases is of any service, greater care should be used by clinical reporters in the description of the sputum and its odour. The use of the word gangrenous is sufficient. The words fœtid, foul, putrid, unpleasant, mawkish, should be left to descriptions of the odour of the sputum of abscess of the lung, putrid bronchitis, bronchiectasis and empyema. Also, with prompt clinical recognition and operation, gangrene of the lung, which nearly all writers look upon as a fatal malady, can be cured, and the danger of infecting the pleura from aspirating the gangrenous focus is not as great as writers describe, if surgical service is at hand to do a thoractesis. Sooner or later in most cases, the pleura becomes infected, either from rupture of the cavity or by contagion, and with good drainage one can expect a recovery, although slow, and relief, from one of the most dangerous and disgusting diseases to both patient and attendant that exists.

THIRTY-FOUR CASES OF TUBAL PREGNANCY

BY

A. Lapthorn Smith M.D.,

Surgeon-in-Chief of the Samaritan Hospital for Women; Gynæcologist to the Western General Hospital and to the Montreal Dispensary; Consulting Gynæcologist to the Women's Hospital.

As the specimen shows very clearly the implantation of the placenta into the mucous membrane of the tube near the fimbriated end, I thought that it would interest the Society to hear a brief report of the case, more especially, as I think that many cases of tubal pregnancy escape diagnosis because they are not kept sufficiently in mind.

Mrs. E. L. age 28 was brought to my office on the 19th May by Dr. Aumont of Montreal. She complained of severe pain in the lower ab-

Read before the Montreal Medico-Chirurgical Society, June 18th, 1906.

domen, which she attributed to a miscarriage which she believed to have occurred ten days before coming to me, when she was six weeks pregnant, although she had suffered more or less for four years.

She gave the following history: She began to menstruate at the age of fourteen and was regular till marriage at twenty-one. She had four children, the last one nine months ago. The second delivery was instrumental. She also had two miscarriages between the time of the birth of the third and fourth children, Her bowels were constipated, she suffered from piles, and it pained her to pass water. She stated that she had some weak and giddy spells without actually fainting and she appeared pale, and had a weak pulse.

On examination the cervix was found to be moderately lacerated, the uterus was in good position, and not much enlarged; but at the back of the uterus and to the left there was felt a large, boggy and tender mass completely filling Douglas's *cul de sac*. The ovaries could not be distinguished, being probably imbedded in the mass. I told her doctor that I suspected a ruptured tubal pregnancy, and we advised her to come into the hospital at once, telling her that there might be a serious internal hemorrhage at any time necessitating immediate operation to save her life. She followed our advice, and after the usual preparations she was operated on on the 25th May in the presence of Dr. Aumont and with the assistance of Dr. Johnson. Her pulse was so weak that Dr. Howell who gave ether, urged me to make the operation as brief as possible, so for that reason I deferred the repair of the lacerated cervix until another time.

Operation: On opening the abdomen the diagnosis was confirmed, for the whole pelvis was seen to be full of old black clots as well as some recent bright red ones. On digging out the left tube the bleeding was quite free until a clamp was applied to the ovarian and uterine ends, after which the tube and ovary were removed. About ten minutes were spent in removing clots and stopping oozing by hot sponges. The right tube and ovary were then dug up out of a mass of adhesions, the tube being found to be closed at both ends and the ovary cystic. As the patient was in a precarious condition I did not venture to prolong the operation by removing them, but I took a minute to snip a piece out of the side of the tube when two drams of bloody fluid gushed forth. I also snipped pieces off the largest cysts so that they could not refil. The last stitch in the abdominal wall was tied twenty six minutes after the first incision. She went off the table with a pulse of eighty, but so weak that it could hardly be felt. After a normal salt solution enema and raising the foot of the bed the pulse gradually improved, since which she has made a rapid recovery.

Remarks: As this is my thirty-fourth case of tubal pregnancy operated on besides about eight others that I have seen in the practice of other operators, I have come to certain conclusions which I will place on record very briefly as follows:

1. That there is nearly always a history of long standing tubal trouble. The woman may have borne children during this time, but a woman can bear children with one tube impaired, and the other one almost closed. As a rule however there has been sterility for several years.

2. There is the woman's opinion that she is pregnant, although she knows there is something wrong about it, especially if she has had a child before. Generally there is severe pain in the side in which it is located of a cramping or tearing nature, due to the spasmodic efforts of the tube to rid itself of its unaccustomed visitor by violent peristalsis. When the rupture takes place the pain is severe and tearing.

3. Then comes the history of irregular hemorrhages which the woman takes for a miscarriage, and which so deceives even experts, sometimes, that a woman with a ruptured tubal pregnancy has been curetted, which of course under the circumstances is a most dangerous proceeding. (Two such cases have been reported by Dr. Vineburg of New York in the last number of *Annals of Gynœcology,* in which the women promptly went into collapse and were only saved by prompt laparotomy.)

4. There is a mass felt in the painful side, which before rupture cannot be distinguished from a hydrosalpinx or pyosalpinx. But after rupture it gives a boggy feeling due to the clots of blood in Douglas's *cul de sac.*

5. There is generally a history of a fainting spell at the time of rupture due to the first gust of blood into the peritoneal cavity. This seems rather to be due to irritation of the great sympathetic than to the quantity of blood lost, for I have seen it when there were only a few ounces of free blood.

6. I am convinced that a great many women die every year from ruptured tubal pregnancy who are certified as having died from heart disease, and acute indigestion. Dr. Warren has diagnosed four cases, Dr. G. T. Ross three, and Dr. Sylvestre three among my thirty-four cases, and one was diagnosed by one of my fourth year students in the person of his landlady. One of Dr. Warren's cases and one of Dr. Ross's cases had been seen by at least three physicians each, before my friends were called in, and the trouble had been diagnosed as acute indigestion, although the women were dying with the abdomen full of blood and a pulse of 140. Two or three times I have heard quite prominent physicians say that nothing would happn if they were left alone. This is a

dangerous doctrine, for apart from the deaths from hemorrhage into the abdomen, there are those due to prolonged suppuration, while the decomposed foetus is coming away by the rectum, and the frightful mortality of delivery at full time of a living foetus by abdominal section.

If diagnosed early and operated on before rupture there is almost no mortality while even if operated on after rupture and with the abdomen full of blood nearly all recover. I lost my thirtieth case nine days after the operation from pulmonary embolism, and that was the only death in thirty four cases.

SLEEPING SICKNESS.

BY

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At present in England, the subject of Tropical Medicine, is attracting widespread attention, and undoubtedly experimental medicine is responsible for the greatest advances which have come to light within the past few years. The discoveries of Novy and McNeal are of much importance, the first, in fact, to obtain pure cultures of protozoa, maintaining trypanosoma of different species, alive. The recent discovery during the past year of protozoan parasites in the blood of different animals, in addition to many new species of trypanosoma, is of much interest, and more particularly owing to the close affinity of these discoveries, with Sleeping Sickness. So far as known, the first to observe "Sleeping Sickness" was Winterbottom, who wrote a brief paper in 1803, giving an account of the native Africans in the neighbourhood of Sierra Leone. The next reports of importance were those of Dumontier and Santelli, in 1868, but by far the most important and accurate account is by Corre, who studied the disease in the natives of Senegambia. In 1891 MacKenzie recorded a case of Sleeping Sickness in the London Hospital, and in 1900 Manson made a special record of two cases in Charing Cross Hospital, sent from the Congo, by Dr. Grattan Guinness. Dr. Mott, the neurologist of Charing Cross, worked out carefully the pathological histology, and defined the lesion as one of the nature of "Meningo-Encephalitis." Until within a limited period the geographical distribution of Sleeping Sickness was limited to West Africa. For some years it has also been known in the Congo as well as in several of the West Coast areas. In 1900 Cook discovered Sleeping Sickness in Uganda, since which date the

Read before The Royal Society of Canada, May, 1906.

disease has spread widely towards the north shore of Victoria Nyanza Lake.

From the various reports of local observers, the epidemic area of Sleeping Sickness is confined to parts of Equatorial Africa. On the Upper and Lower Congo the disease has been noted in epidemic form, large numbers of the population falling victims to its influence.

As to the cause of this disease many hypotheses have been propounded in explanation, such as the intoxication of food, animal parasites and bacteria. Since November, 1902, Castellani frequently observed trypanosoma in Sleeping Sickness; in fact, he discovered trypanosoma in the cerebro spinal fluid of 20 out of 34 patients. According to Dr. Mott, the cerebro spinal fluid in Sleeping Sickness always contains trypanosoma, and likewise the juice of the lymphatic glands, by puncture, during life. He also states (Proceedings Royal Society, 1905) "the evidence of the existence of trypanosomes in the blood of animals dying of trypanosoma disease may vary very considerably."

Thus far there is a degree of doubt as to the exact pathological condition in Sleeping Sickness, which only time and further researches can decide.

The disease first broke out in the Province of Basoga, where it is supposed to have been introduced by Emin Pasha's Sudanese and their wives and followers, settled in Basoga. This disease had been epidemic in the Congo country, hence the supposition that a certain number were suffering from Sleeping Sickness in its incipient condition. In this section of country the disease assumed such a severe form that in a short time it reduced the population of Uganda to a minimum. The chief part of the nervous system influenced by it is the brain, the functions of which become gradually disturbed, so much so, that the mental attitude of the patient is soon noticed by the relatives: no desire to work, but rather to rest, owing to headache and pains, in the chest. This disease is quite different in the Foola country, and more so in the interior than on the sea coast, and, strange to say, children are seldom affected by it. Those giving evidence of the disease exhibit a somewhat ravenous appetite, eating much more than when in usual health, and gradually growing fat; this, however, lasts but a short time, as the appetite declines and the loss of flesh becomes quite evident. Squinting and convulsions frequently occur before death. The presence of glandular tumours in the neck is not uncommon in the incipient stage of development, and slave dealers avoid the purchase on that account, fearing the development of Sleeping Sickness. The disposition to sleep is so strong that the desire for

food is not marked. The whip, setons, or even blisters fail frequently to arouse the patient from the lethargic condition, which is generally fatal in a few months.

There is usually a dull, heavy, stupid look, and a characteristic slowness in answering questions, and a well defined shuffling gait. The temperature is remarkable, in the evenings rising to 101° F. and becoming subnormal in the morning. During the intervals of examination the drowsy lethargic condition steals on, and when he sits down the head nods, the eyes close, and thus he continues, until again aroused and questioned. As to the final issue, much depends on whether the disease will develop an acute or chronic form. Tremors of the tongue and arms are not uncommon, the general reflexes become lessened in intensity and drowsiness gradually passes into coma, and the patient passes away in a state of complete insensibility. In chronic cases the symptoms are slower in development, but usually eventuate in a like fatal issue.

Sometimes preliminary symptoms of an exceedingly slight character might be in progress for years, and, in fact, so feebly defined as to be almost sublatent, until very gradually the symptoms deepened in intensity, when the gait, speech, and food supply, entirely changed from the normal condition, gradually lead to profound coma and death. It is not generally accepted that this disease is caused by the entrance into the blood of a minute protozoan parasite; the *Trypanosoma Gambiense*, first described by Dr. Dutton, who while searching out this disease lost his life on the West Coast of Africa. In South Africa there is a disease known among cattle and other domestic animals caused by the Trypanosoma Brucei, and conveyed by, and communicated from sick to healthy animals, by a "biting fly," the *Glossina morsitans*. The idea followed that Sleeping Sickness might be produced in a like manner from a "biting fly." "Large collections of these biting flies were made, with the remarkable result that the distribution of Sleeping Sickness and of a biting fly, the *Glossina palpalis*, corresponded exactly with each other." Col. David Bruce, R.A.M.C., F.R.S., addressed the meeting of the British Association on this subject during the recent meeting in South Africa, and brought to light many interesting facts in this line of research, which cannot fail to be of great service.

Sleeping Sickness is not contagious, and, in fact, is only considered infectious in a limited sense. The disease is generally believed to be fatal, but in a few cases recoveries are vouched for.

Dr. Todd, of McGill University, recently returned from West Africa, having extended his observations over 2,000 miles of "The Free State."

from the mouth of the Congo. He favours the idea that nearly all general glandular enlargements, without evident cause, such as syphilis or tuberculosis, are cases of trypanosomiasis. The palpation of these enlarged glands in the posterior triangle of the neck is considered sufficient evidence of the disease. The juice of enlarged glands, removed by the hypodermic needle is unfailing as to the production of trypanosomes, even when not found in the blood. Dr. Todd considers the sleepiness rather as a terminal sign, and not necessarily an unfailing symptom of the disease.

Information has just been received (*British Medical Journal,* May 5th, 1906) that one of the Commissioners sent out to Uganda in 1904, by the Royal Society of England, to investigate Sleeping Sickness, has been infected with the parasites believed to produce the disease. Two officers of the Royal Army Medical Corps, Lieut. Gray and Lieut. Forbes Tulloch, were the Commission. Last March an official telegram was received in London that trypanosomes had been found in the blood of Lieut Forbes Tulloch,* and there is widespread sympathy expressed for this young and zealous officer, suffering in the cause of science, and the members of the Royal Society of Canada join heartily in the hope that he may make a safe recovery. Since the discovery of trypanosomes, the parasite has been recognized in seven persons of English birth. Of these, three have died, and four are still living. From most recent data, a proportion of recoveries is to be looked for in the trypanosome disease of man, and the terminal and fatal condition Sleeping Sickness is not inevitable, and although a necessary factor in the production of the disease, not always followed by its development, and much work has still to be done before a positive opinion is arrived at, as to either the prognosis or treatment of this disease.

Sleeping Sickness has been considered by some experts a form of Beri-Beri. Such, however, is not generally accepted. Beri-Beri is, in fact, a periphral neuritis, and develops rapidly. The knee reflex is absent in both and hyperæsthesia of the muscular system is a striking characteristic. In Sleeping Sickness these symptoms are wanting: the tremor, pyrexia, and lethargy, are marked features.

Professor Robert Koch recently investigated Sleeping Sickness for some months in South Africa, and favours the opinion that this disease has been known on the West Coast of Africa since the beginning of the last century. Sir Claude de Crespigny visited the hospital at Eutebbe, German East Africa, and considered that the disease is conveyed by the Tse-tse fly, only about two per cent. disseminating the fatal germ. It is doubtful whether the disease emanates directly from

(This officer has since died. Ed.)

the fly, or the latter conveys it from dead fish, and is spread like yellow fever, by mosquitoes. In large sections of Africa the horse is not seen, and cannot survive, owing to these insects, and the monkey at one time supposed to be immune, frequently succumbs, a victim to a like influence. Dr. Koch inclines to the opinion that Sleeping Sickness is a form of cerebro-spinal meningitis.

The present interchange of commerce with the numerous tribes in South Africa, from Britain, and nearly all Europe, makes this disease an important problem, not alone, as to the economic future of South Africa, but also as to the outlook, in the direction of public health.

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CASE OF PUERPERAL PHLEBITIS WITH CELLULITIS OF PELVIS AND ORBITAL CAVITY AND DESTRUCTION OF PART OF ONE EYE.

BY

A. Lapthorn Smith, M.D. and Richard Kerry, M.D.

Mrs. F., aged 32, born in Canada, menstruated at 14, normal till marriage at 22; had five children, last one on 16th June, 1905. The first and second labours were difficult, requiring instruments, but the last three were perfectly normal. She made a good recovery from all her confinements, but especially after the last one which was so easy that the child was born before the doctor arrived; and she felt so well that she was up and around at the end of ten days. She continued to feel well until the nineteenth day when about four p.m. she was suddenly taken with chills, and at the same time her left leg began to swell and be painful. Then her abdomen began to swell. She was conscious until the 27th day, when she lost consciousness for several weeks.

When she recovered consciousness she was quite blind in her left eye. A few days later or about seven or eight weeks from the beginning of

Read before the Montreal Medico-Chirurgical Society, 4th May 1906.

her illness her left eye began to swell until it projected from the orbit. Within a week the orbital abscess broke and great quantities of pus poured out from under the upper lid. Then her eye sank back again in the orbit, but she remained quite blind. The leg gradually got better, but both legs remained drawn up at right angles with the thighs. In order to overcome this, weights were put on for a month, but they failed to straighten the legs. Then an abscess formed in the cellular tissue of the left side of the pelvis, which pointed in front above Poupart's ligament, and behind just above the sacro-iliac joint. As her temperature had kept high for four months, and as she was rapidly going down hill, she was brought into the city on a mattrass in a baggage car, and entered the Samaritan Hospital under my care.

On examination I found the uterus, ovaries and tubes perfectly normal and quite distinct from the tensely fluctuating swelling on her left. A few days after her admission a free incision was made into the abscess cavity above Poupart's ligament, and another over the most prominent point of the swelling at the back. About a pint of pus, and a large decomposed blood clot about five inches long and as thick as the first finger was removed. The cavity was washed out with perchloride and plain water, and a large drainage tube with many holes in it was passed from front to back, rendering it easy to keep the cavity clean with peroxyde of hydrogen. It required several weeks before it was safe to remove the tube, although her temperature fell at once after the opening and draining. A nurse was set to work massaging and stretching the contracted hamstring muscles and eventually she was able to walk at first with crutches, then with a stick and finally without any help. During her stay in the hospital she gained about forty pounds.

Dr. Kerry kindly examined her eye and will give his report. The interesting features of the case were: 1st That her labour was normal, that she got up on the 11th day, and did her work until the 19th day without any evidence of infection; that something happened to block up the iliac vein; and later probably the opthalmic artery. It is evident that an embolus could not get from the iliac vein to the opthalmic artery, because it would have to go through the capilliaries of the lungs. Therefore I think it more likely that she had an endarteritis with vegetations on the heart, and that one of these was carried up to the opthalmic artery. Another curious thing was that the left leg and left eye were affected. Why not the right? As for the abscess in the cellular tissue of the pelvis was it due to infection from the iliac vein? Did the vein suppurate and discharge its clot into the cellular tissue? We seldom see cases of phlebitis of the legs now and stilll more rarely have an

opportunity of feeling the pelvic cellular tissue as I had; being able to explore it with my finger, when cleaning it out. We had seriously thought of having her legs straightened forcibly under anæsthesia, but she told us that her mother had had the same difficulty after a long and severe illness, but that they had been straightened by massage and exercise.

Playfair in his chapter on "Puerperal arterial Thrombosis and Embolism" says: "The same condition of the blood which so strongly predisposed to coagulation in the vessels through which venous blood circulates tends to similar results in the arterial system. These, however, are by no means so common and do not, as a rule, lead to such important consequences." The subject has been little studied, and almost all our knowledge of it is derived from a very interesting essay by Sir James Simpson. The latter records several cases of sudden supervention of blindness with destruction of the eyeball, which he attributed to the occlusion of the opthalmic artery, the function of the organ depending on its supply through the single artery. In our case the cellular tissue and back of the eyeball were undoubtedly destroyed in this way, but the cornea was probably saved in perfect condition owing to the blood supply from the conjunctiva, and the latter being supplied by free anastmosis with branches of the facial artery.

We have stated that it is unlikely that an embolism big enough to block up the opthalmic artery could get through the capillaries of the lungs, but Weber and some later pathologists claim to have proved that minute infected emboli may have been through the lung capillaries. Playfair claimed that localized inflammations occurring a short time after delivery are directly produced by the infected blood, while those occurring after the lapse of some time as in the second or third week, depend upon embolism.

The destruction of the cellular tissue in the pelvis may have been due to infection by cocci traversing the wall of the iliac vein, or the suppuration and bursting of the abscess into the cellular tissue. Or again minute emboli may have been washed off the valves of the heart and been carried into the small artery supplying that particular part of the pelvic cellular tissue just as the cellular tissue of the orbit had been necrosed.

DR. KERRY'S REPORT ON DR. LAPTHORN SMITH'S CASE.

The orbital abscess was in this case accompanied by involvement of the eye-ball. On examination, which was made after the disease had run its course, the eye was found shrunken, about three-quarters of its

normal size, and quite free from active inflammation or pain. The tension was sub-normal. The pupil was occluded, small and regular. It is interesting to note that the anterior portion of the eye remained apparently normal after the disorganization of the posterior part; the cornea being clear and bright and the anterior chamber and anterior surface of the iris showing no change. There was no perception of light or of phosphenes.

The infection travelled from Tenon's space along the lymph channels surrounding the "venæ vorticosæ," setting up severe iridocyclitis and possibly causing a purulent focus in the vitreous chamber. After the breaking of the abscess, this was followed by a subsidence of the inflammation and partial absorption of the contents of the vitreous chamber or the posterior part of the eye, which closed soon afterwards.

As the posterior part of the uvea with the nerve endings in the eye were apparently destroyed, as there were no signs of irritation and as shrinkage of the ball did not appear to be progressing interference was not deemed necessary. The patient was advised, however, to report promptly should trouble occur, and warned of the danger of delay.

A CANADIAN HOSPITAL OF THE 17TH CENTURY.

BY

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The greatest river rises in a tiny spring somewhere, and the hospitals of Montreal of to-day, imposing and costly, had their forerunner in a miserable and tumbled down house in La Flèche, where three servant maids ministered to the sick. La Fleche was a little town of Sarthe on the Loire, and therein dwelt a civil servant, one de la Dauversiere, who was its first patron: the father of six children, the historian remarks "God called him to greater things," and he began the foundation of an order to tend the sick in Canada for the honour of St. Joseph and Our Lord. Moved by a vision, de la Dauversiere threw himself heart and soul into his task, and it is stated that the first assistance he obtained for his work was two deniers given by a child, and the second was one denier from a poor woman: ready-tongued tradition has not failed to tell that the former was the Christ-child himself, and the latter the Virgin: in 1636 under these auspices, the order was founded, and inextricably woven with its history, and with the story of the hospitals of Montreal is the name of Jeanne Mance, although at this time de la Dauversiere knew not even of her existence; in a few years from the founding of the order, Mlle. Mance was its sole and guiding spirit.

In 1606, or near it, Jeanne Mance was born at Nogent-le-Roi, a village of Haute Marne: at the age of thirty-four her mother died, leaving her an orphan free to do her own will, which was to go to Canada. Discouraged by her confessor, she went to seek more enthusiastic advice at Paris. The gossips must have had their little spites to propound, for her biographer says, "Many imagined that Jeanne" (who was fair of body it seems, as of soul) "who lacked none of those external advantages which could make a person sought after in the world, would yield to the temptation of going to be admired at Paris." With far other thoughts, however, she went, and after some encouragements, not without discouragement, she set out for La Rochelle to take ship. On her arrival she fell into kind, but Huguenot hands: "Father Laplace had her conducted elsewhere, without her even asking it of him," and for that forbearance, even a heretic must hold her in honour.

While these preparations were in making, Abbé Olier, founder of the Company of St. Sulpice and de la Dauversiere had met; each being by Heaven warned by the same vision, they knew one another and one another's affairs without the intervention of any third person, though they had never seen nor heard one of the other. It is a little monotonous that the same thing occurred with Mlle. Mance and de la Dauversiere; but these three suited one another exactly in the matter which was dearest to them all, and Mlle. Mance decided to sail to Montreal; de la Dauversiere was provider, and he and Father Olier formed the Society of Our Lady of Montreal, acquired the Island of Montreal and the services of one Paul de Chomedey, Sieur de Maisonneuve, a gallant and godly soldier, who had seen his first battle in Holland at the age of thirteen and was now a young man in the early prime of life, possessed of high ideals and what was more essential for a life in the New World, keen common sense.

It must have been a heart-sick little colony that sailed from La Rochelle that spring morning in 1642 in a clumsy little ship that sailed slowly, rolled and tossed out of all reason, smelt of bilge water, and gave no one room to more than turn on its decks, to say nothing of its dark and dismal hold, where port holes, light and air were equally unknown. Mlle. Mance had the support of two soldiers' wives, and a stow-away girl of birth, who had fled from home with ideas akin to Mlle. Mance's own. After a prosperous voyage, they reached Quebec, but had to wait the arrival of two other vessels, which had been stormed-stayed: even in this little corner of the world, jealousy had sent out its skirmishing lines, and their reception in some ways was a little cold, for the authorities at Quebec resented the establishment of a near-by post which was not under

their authority. Mlle. Mance was taken in by some kind-hearted family and spent a winter of usefulness in many humble ways. On the 6th of May, 1642, the start was made, and eleven days later they sailed past Bout de l'Isle and came in sight of the place chosen a few years before by Champlain, for the establishment of a colony.

At this time Hochelaga was an Indian village of considerable size, and it is possible that the remains of Champlain's stockade were still standing: when the colonist landed, it is probable that they did so at the foot of St. Mary's current, in which the progress of their deeply laden boats would be slow and difficult; the historians of Mlle. Mance tell much of the building of the shrine but nothing of the construction of the dwellings. In the hands of Maisonneuve the work was quickly undertaken, and the slopes of Mount Royal resounded to the axe, so that by winter there was at least a habitation for the pioneers. In December of this year, the river rose upon its banks (the biographer must bear the onus of an error in the date), and the Sieur de Maisonneuve, now anxious for the fate of his houses, planted a cross at the edge of the rising water and laid himself under a vow should Divine power keep them safe. The foot of the cross was over-flowed, the water rose to the very doors; another inch would destroy the powder magazine—and the water began to recede. True to his vow, Maisonneuve carried on his shoulder, a heavy cross up the devious ways on the slopes of Mount Royal and planted it on the highest point of the hill, where Mass was said and the communion dispensed—a glimpse of the mediæval crusades in prosaic Montreal.

In October 1644, the eighth to be exact, the hospital was opened, the original Hôpital de l'Hotel Dieu de Montreal, a structure modest enough. Sixty by twenty-four, of axe-hewn beams, the crevices filled with mud, the roofs of slabs, if not of less pretentious material, there were yet therein two rooms for the sick, a kitchen, a room for the servants and one for Mlle. Mance, the founder and director. A chapel, 10 feet square, was built of stone adjoining it, and in the following year, arrived from France, the furnishings, first for the chapel, then for the hospital rooms, as well as medical stores and surgical instruments, and the hospital had for endowment five cattle and twenty sheep.

Where, one may ask, was the physician, considered now an indispensable adjunct to a hospital? As yet he did not exist. Several years later, when Mlle. Mance fell on the ice, dislocated her wrist and broke her arm, the best medical skill at command was that of a priest, who had made some study of the art. But what tender, devoted and self-sacrificing care could do, Mlle. Mance and her faithful assistants gave—for in these attributes the colony was truly rich, and they gave alike to the Indian and to the colonist.

A French lady, M. de Bullion, at this time in an anonymous way, had become the godmother of the hospital, and she donated 42,000 livres, equivalent to one-fifth as many dollars to-day, of which 6,000 were consumed in building and the remaining 36,000 formed an endowment fund.

No sooner was the hospital built than its usefulness became apparent, for many of the colonists were wounded by the Iroquois: instead of one servant, Mlle. Mance soon required three, and to safe-guard the hospital against the attacks from the Indians, a palisade was built to surround the hospital and its stables: another sick room was taken from the various chambers allotted for other purposes, and by the time all this was done, the furnishing and building had cost 30,000 livres, but the generous woman who had undertaken its support at once gave this amount in addition.

If one could have landed on the north shore of the St. Lawrence in 1648, he would have seen dense forest stretching up to the top of Mount Royal, reaching far up the river to the left and down to the right, broken only by the clearings whereon stood Indian Hochelaga and French Ville Marie: to the right, the tepees of the Hurons, with a large population of children and dogs, looking busily active, without being industrious: to the left, separated from it by a half mile belt of woods, stood the two tiny fortresses, the hospital and the main dwellings: where the trees had been cleared, stood little fields of maize, and over all brooded peace. "The brave colonists," says the historian, "had more confidence in the prayers of these saintly women than in the swords and muskets of the soldiers," but for all that, the Sieur de Maisonneuve was not the man to let the powder get wet, and there is little doubt that the Iroquois laid more stress upon the muskets.

Yet, in 1650, it was apparent that all was not right with the little colony: its numbers had been depleted by the arrows of the Indians, some had lost heart and gone home, there were shadows of internal dissention, money was scarce, supplies few and Mlle. Mance went back to France, where she succeeded in strengthening the company and obtaining the necessary funds. Before her return, the Iroquois made a great attack upon the Hurons, of whom those who were not slain, fled: made bold by their success, they determined to extirpate the colony of Ville Marie, and by frequent, merciless attacks, they killed many of the colonists, torturing their prisoners, and burning the outlying houses: the hospital was now flanked by two redoubts, each of which was furnished with a piece of artillery, and defended by all the available arms. One day a colonist and his wife were pursued towards the hospital stockade,

and the woman, falling behind, was captured: the husband turned back to share her fate: three colonists running to their assistance were suddenly attacked by 40 Iroquois who had lain in hiding close to the hospital; the men at once ran for the main entrance, where Mlle.Mance waited to open the door to them: as she closed it behind the last one, his cap was shot off, but the little garrison was safe. One who had taken to a tree, by kicking his assailants, succeeded, in this inglorious way, in saving his life, though at the expense of a partial scalping: thanks to Mlle. Mance's good care, he lived, and though only partially thatched, had 14 years of useful life. On the 26th July, 1651, the hospital was attacked by 200 Indians and defended by 17 soldiers: the Indians crept up by a ditch, until they reached what is now St. Paul street, whence they descended upon the little stockades. From 6 o'clock in the morning the fight was sustained for 12 hours, and the only loss to the garrison was sustained by the bursting of one of the cannon. So frequent were the attacks upon the hospital that the dwellers there were compelled to take refuge in the main fort, since the hospital could no longer be properly garrisoned. The safety of the whole village being thus imperilled, the urgent necessity of reinforcement from France was evident, and Maisonneuve undertook the journey, the hospital endowment furnishing the money. The attacks of the Iroquois continued, till but 17 men could bear arms: a temporary reinforcement of 10 from Quebec enabled them to tide over the difficulty till finally Maisonneuve led back more than 100 men. Now it was possible to extend the hospital, and a new building 24x30 and 20 feet high was built: at one end of this the church was built, 50 feet long, with nothing less than a belfry and two bells. By the spring of 1654, Mlle. Mance was able to move back to the hospital, and its sorely interrupted work once more went on. There is no doubt that the salvation of the colony was due to the judicious employment of the hospital funds to the common welfare.

Of the hospital itself, little can be told for the next few years: in 1657, a fall on the ice broke Mlle. Mance's arm and dislocated her wrist, the latter injury not being recognized for six months; by this time the arm was useless, became atrophied, and subjected her to so great pain, that in the crises of pain, it required four strong men to hold her. Two years later the arm was miraculously healed by being touched by the casket containing the heart of M. Olier; of the cure there is much excellent evidence: much medical evidence is adduced to show that the arm was considered incurable by the Paris surgeons who saw it: at this late date, a sceptical scribbler may be forgiven if he lays stress upon the "four strong men" incident.

While these things were transpiring, the sisterhood of the Ursulines at Quebec as showing signs of an anxiety to have control of Montreal, and Queylus, who was a Sulpician, strongly asserted their claims, urging that the Sisterhood of St. Joseph of La Flèche was poor and far away: Laval on his arrival supported this view, but Mlle. Mance, applying again to M. de Bullion, was successful, and an endowment for the Sisters of La Flèche was founded, and the Company of Montreal undertook to send the nursing sisters to Ville Marie. After difficulties over passage money, an epidemic on board ship, and many other obstacles, not least of which was the will of Laval, at length the sisters from La Flèche were allowed to take over the charge of Ville Marie, although the sisters from Quebec had been unremitting in their endeavours to gain a foothold.

Now that everything seemed to go well with the sisterhood of St. Joseph at Ville Marie, arose a new difficulty. The good de la Dauversiere, he of the large family and the call to greater things, died, and it was found that he had used 22,000 livres of the money of the hospital at Ville Marie to repay certain shortages in the Royal accounts; his losses were due to a certain shipwreck,—in fact, he had speculated and embezzled. The historians are very loath to more than mention this little slip, and with them, de la Dauversiere's odour of sanctity still exhales itself. The hospital funds paid but a small fraction of the royal shortages, but took away the entire substance on which the hospital subsisted, and the evil days were again upon them, the more so as Laval withdrew the favour he had grudgingly given, and refused to sanction the establishment. Reduced to extreme poverty the hospital now was: the sisters were compelled to sell their spare clothes and shoes for corn, pork and vegetables: their food consisted of the coarsest of bread, pork once a day or once every two days, the vegetables they could raise in their own garden, and as a luxury, a fish: other meat they rarely saw. They suffered extremely from cold, and one of the duties of the night watcher was to throw out the snow that blew through the crevices between the logs. At intervals the Iroquois attacked the village, and ambushes were often laid near the hospital, to seize the sisters as they went in the night to the care of the sick, but always unsuccessfully. To crown all, in 1663, a severe earthquake, lasting five minutes, terrified the community: the hospital patients were carried out and laid in the snow, but there was no great damage wrought—on the contrary, a great access of piety in the whole community was the result. In the hospital, an Indian attempted to strangle the nursing sister but was prevented by the assistance rendered her by the other patients. To avoid displeasing the Indians who were friendly, the sisterhood at times partook of sagamité,

and that this was not the least of their ills, a description of sagamité will show. "In a large pot on a tripod, was put corn and water. The Indians added to this the fattest of their dogs, after grilling them over the coals to remove the hair; cats, bear, beaver and other animals were also used. The whole was boiled together for about half a day, then prunes and raisins (wild varieties) were added, it was cooked for two hours more and then distributed."

In 1663,a severe epidemic broke out at St. Anne,in the Royal garrisons; 40 out of 60 men were striken, and many were brought in to the hospital, but despite care, there was great mortality. Of the following uneventful years we know nothing: we can picture Mlle. Mance, now grown old. still engaged in her active work, which she never completely relaxed; doubtless she was a familiar figure in the village to everyone, and doubtless also much loved. In 1673, she died as she had lived. Her heart, as the custom was, was kept in the church, with certain small remembrances of her, but in 1695 fire destroyed the last trace save what exist in memory and example, of a noble and self-sacrificing woman.

ADDRESS TO THE GRADUATING CLASS IN MEDICINE OF McGILL UNIVERSITY.

BY

WESLEY MILLS, M.A., M.D.,

Professor of Physiology.

Speaking for the Faculty and myself, I must first of all congratulate you who have become graduates in medicine to-day. Your position could not have been attained without the exercise of much self-denial and many other qualities that tell in the formation of character. Some important changes, which we look upon as improvements have taken place either during your undergraduate period or so close to it that you could not but feel their significance. You were almost the first to work in the new laboratories; and, in your period, new hospitals have arisen and the old ones have been improved, with still greater progress in contemplation. You have been in sight of that conflict which enlightened and liberal medical sentiment waged against provincial narrowness, when our Dean endeavoured to remove the stigma that attaches to our country because medically it has been a house so much divided against itself; and if there was a check in the achievement of an object so desirable that one wonders how there could be any two opinions about its desirability,— such check can in

the nature of things be only temporary and, let us hope, of very brief duration. Unless the medical men of this country are either forgetful or ungrateful, the name of Thomas Roddick should go down in the medical history of Canada as one of the profession's most deserving champions.

During the past ten years, too, a change has been gradually coming over the University in the direction of greater unity with more of the University Spirit. Medicine has been the last of the faculties to avail itself of closer union. As all these changes have been brought about through the legitimate use of the higher methods of persuasion—with appeal to reason—and without loss of faculty individuality so far at least, we may look with satisfaction on a result in which the Principal of this University has played the chief part. You, gentlemen, have been university students as none before you in medicine; and if to-day I rather speak of universities than medical schools it is hoped that a certain fitness in things may appear.

We have so often on such occasions as this heard the note of satisfaction and jubilation that, perhaps, it may be well to consider some of the aspects of medical schools and universities which may at least give rise to question if not anxiety. Within a very few years changes have taken place in medical education so radical that to some there seems to be a danger of casting aside much that is good in adopting the new. This convocation dress of yours, while admirable for the occasion, is scarcely the best conceivable for the performance of an operation or even the ordinary everyday work of the medical practitioner. So there is the danger that universities put too much faith in buildings and equipment,—the obvious, the external—and too little in the invisible spirit of man. Our laboratories may be beautiful, well equipped, scientific playhouses, yielding little to the average student that will really tend to make him a man of intellectual fibre. There is danger of scientific formalism; and hospital ward-work, so-called, may easily degenerate into a mere exercise of the senses, seeing and hearing, unless vitalized by those guiding principles that raise the doctor proper above the untrained nurse. A student now has so many advantages, so much done for him, that he is apt to become a mentally feeble and limp organism as the result of feeding with pre-digested food; not to mention the failure in development of individuality and originality, on which more than anything else a man's value in the world depends.

The modern pathology is so new and so beguiling, if not fruitful, that there are those who would turn medical institutions, even hos-

pitals, into schools of pathology; and with the bugbear of "If you do not do this and that you will be behind the times," scare faculties into expenditures which induce a financial anæmia from which all other departments suffer. Others would convert medical colleges into schools for clinical medicine. They would have the students virtually live in hospitals.

The students, of course, like these new proposals. The laboratory engages the hands and the eyes and this in itself must naturally be pleasant to young persons. It is agreeable to talk to patients about their ailments and hear their life-story generally; and it is still more agreeable to commune with the amiable and accomplished nurses. But to take down half a dozen books from a shelf in the solitude of one's own room and for two hours with pencil and paper in hand, read, analyse, compare, apply,— all this is another story,— and yet without just such work as this laboratories and hospitals will be vain. Such is written in the very brain and mind of man. Of the three divisions of the brain cortex, the sensory, the motor, and the associational, the latter in the brain of man is the largest and most important; but it is just this which the laboratory and hospital least cultivate, though they furnish the *material* for the work of the higher part of the brain,— that which is concerned in the more elaborate processes of thinking.

Let me not be misunderstood — laboratory work and hospital work are absolutely necessary for the education of the student, but they are only part and not in themselves final. The best laboratory for any man is that inexpensive and highly portable one that he carries beneath his hat.

Battles have been planned, if not won, in the study, and there it is that all great things begin. By "study" I mean really that place, wherever it may be, in which a man thinks best—where he isolates principles, makes generalizations, and constructs plans for those manipulations that make conclusions possible. All the great advances in medicine have been originated in such studies. The laboratory and hospital have been testing houses and demonstration rooms, checks, definers, and much more — indispensable, but not all and not the chief thing as we are inclined to believe to-day.

What the medical students of McGill now need to take heed to is to do the one (laboratory and hospital work) and not leave the other (study work) undone.

Gentlemen, this day do we remember our faults before you; at least, I speak for myself. We have treated you for four years,— your most developing years, too — very much as if you consisted of pure intel-

lect only — and we have attended so well to this that we have given you very little opportunity to do anything for yourselves. Yet, it is just the part a man takes in his own development that counts above everything else. As one of your number has well expressed it, "The teachers in medical schools act as if they thought that all a man should know for the rest of his life must be taught in the four years of his undergraduate course." The result is mental dissipation, no deepness of earth, little originality or even individuality.

Determining a man's value before his fellow students by such processes as those we term "examinations" is, to my mind, a most crude and unsatisfactory method, responsible for both moral and intellectual defects so great as might well make us pause. It would be well if we could in universities bring education more nearly up to our best knowledge of human nature and not be forced to constantly bring it down to meet the standards of the commercial world. It becomes a question as to whether universities on this continent at all events are any longer chiefly centres for the fostering of the humanities, temples for the cultivation of the highest ideals, the noblest aspirations, the perception of the beautiful in conduct, in art, in nature. Are they not largely mere technical schools where young men congregate to learn how to get a "better living," in the vulgar sense, than they otherwise could obtain. Parents cast about and ultimately send the boy to college, as an axe is sent to the grinder's, to get a sharper edge put on him that he may the readier cleave his way in that material world in which men without great exaggeration may be said now to live, move and have their being.

This boy, like enough, long ago lost that love for real knowledge with which every child is born. He discovered that the great thing at school was to get promoted, and that the idea of advancement—getting ahead of one's neighbour—is the purpose of life. Why should he believe differently or act on other principles at college? So that it is common to find the student looking solely to being able to pass examination with a minimum of knowledge and a maximum of invention as to how to accomplish this — the great end.

The chief essential — *a thirst for knowledge* — is absent in a large proportion of cases, or it is quite subordinate to the action of other forces. The young student has already observed that the majority of those around him seem to believe that a man's life really does consist in the mulitude of things which he possesseth; and, as they seem to cherish this creed with all their heart and soul and mind and strength why should he not also? Literary taste, the inspiration from poetry,

the deep joy of gazing at a noble work of art, or the still more beautiful works of nature, the happiness from finding the unutterable expressed in music, the capacity to feel the beauty of a self-sacrificing life, the perception of the fitness of things taught by philosophy and science; why should he develop these? In themselves they have no market value, and gold is the only standard most of the time. It is not as of old—"Get wisdom, get understanding," but get riches and get the understanding of how to do that better and more quickly than other people. If any one doubts the influence of these material ideals let him take up a college paper — remember, I speak of universities on this Continent, not specially of this one. What will he find in that paper? Accounts of athletic contests, of dances, and similar social events interlarded with witticisms---maphap couched in doubtful English. And McGill has a magazine which would be a credit to any university, but it is not read by the students, and not written for by the graduates. For its support it is dependent on the literary contributions of a very few people, mostly academicals.

A man may take a degree at any American university without giving any evidence whatever of speaking his own language "with neatness, elegance and propriety;" on the contrary, he may so utter his words as to be with difficulty understood, and he may insult the ear with an abominable nasality of tone, and still become a B.A., M.D., or Ph.D.

But all this is but a reflection of the big world outside the college hive. The great man of to-day is the one who can change or move matter; all others affect the masses but little, if at all.

You, Gentlemen, may any day see the Montrealer clothe himself at great expense in purple and fine linen, then complacently walk through about the worst kept streets in the world — illustrating the combination in the one person of a marked tendency to personal luxury and a conspicuous lack of public spirit.

There is a widespread æsthetic taste. We attain at a great outlay in time, money and energy to what is at best mere personal or domiciliary prettiness while that real abiding beauty, the fruit of genius, alone is all but unknown. People are too busy to stop to drink at that vivifying spring that never dries up, the beauty of nature.

In this whole vast country of ours I cannot point you to one really fine collection of statuary or paintings; and there is a corresponding dearth as regards the drama and music — indeed, of all forms of the higher art.

Gentlemen, if you prefer Shakspeare to the *Sporting News*, the Ninth Symphony to Ragtime, the Sistine Madonna to the beauties that adorn

our fences, it is not because either your country or any university has greatly concerned itself in the matter. To my thinking a state of mind such as that referred to marks a man as barbarian whatever his intellectual sharpness as such may be. Such an one is not even half developed.

I grant that this is not inconsistent with the building of bridges, the management of railways and the diagnosis and treatment of medical cases, but if a man is meant to be more than a mere machine well adapted to manipulate matter, if there should be capacity to appreciate such things as some in all ages have felt necessary to their being then is a life thus spent more or less of an arid waste.

And we jump the life to come in our hot haste to pile up matter. Is it not just possible that the whole drama does not end here, and that there may be other acts to be played elsewhere, for which a life spent in devotion to materialism may not be the least possible preparation. But, perhaps I should apologize for referring to this on a working day. What is the remedy for this state of things? A truer appreciation of relative values — a new set of ideals. When shall the remedy be applied? Now. How? By beginning at home.

Gentlemen, I hope you will not worship the Golden Calf, though it be the fashionable religion for six days in the week. It is a fearful delusion — widespread, almost universal on this Continent. But if you hope to enjoy a large and lucrative practice by certification to this form of insanity, you will be disappointed. The delusion will spread, the disease will get worse, and then there will come a change for the better; but when or how, neither you nor I can sufficiently look into the future to say; but I have enough faith in human nature to believe that the change must come,— men cannot forever be so blind.

If you have understood me aright you will see that I believe you stand greatly in need of a post graduate course.

You may have been like the farmer who, having a hundred acres of land, cultivated but twenty. Much of your nature may have come under the plough but has not been subjected to the harrow; and yet I deem you the equal of most university graduates on this Continent. The medical students of McGill can no longer rightly be held to be less cultivated or refined than other undergraduates.

Oh, that some wholly enlightened Carnegie would found an institution somewhere on this earth in which the aim should be the development to the highest of the whole nature of man without the idea of converting everything into gold! In the meantime I can direct you to no single institution in which you can find the ideal of a complete

and harmonious development of the whole man distinctly aimed at and provided for.

You must look to your own development. As soon as you can get ready to do so, leave this country for your country's good — but in the first instance with the object of becoming completely developed men, and in the second, of being practitioners equal to every occasion.

There will be all sorts of pressure brought to bear upon you to induce you to put the latter first, but to do so would be to make a life-mistake.

Learn French, and especially German. Go to Germany, the stronghold of science, the part of the world in which medicine has, on the whole, reached its highest development,— a land of honest industry, a land in which literature, art, philosophy, and science, are everywhere respected. Materialism is not in all quarters regarded as the highest good.

Your ultimate destination may, perhaps, be the Austrian capital. Stop in Paris on your way. The *bridges* over the Seine will set a new ferment of civilization working within you. With reverend steps pass within the Louvre, where you will find that great collection of the works of the men of genius in art of all ages—the whole open to you free. France is the generous custodian of this treasure-house for the good of all nations. If, after seeing that, you do not feel expanded in soul — return, your case is hopeless. But, if you feel the littleness of your poor self and the greatness that is undeveloped in humanity, go on to Berlin, the cleanest and best kept city in the world, as it is also one of the most beautiful. Cast about — on every hand you will see evidence that other things than wealth are respected there. Everywhere rise monuments to the memory of men who have distinguished themselves in the various fields of human activity and culture, including medicine. The German capital is an art as well as a military centre. In the Royal Theatre of that city there are more productions in one season of the plays of our own Shakespeare than in all English-speaking countries put together, and there too one may hear more high-class musical productions than anywhere else in the world.

For every department of medicine there is the amplest provision. You can develop your whole nature from every side in Berlin and specialize as much as you will in your chosen profession. If you systematize your activities and waste no time (and which of us does not waste a great deal?), you will be able to get all you are capable of assimilating in medicine and have some time left to develop your better human nature.

It is possible to be a thoroughly qualified physician without being at the same time an utter barbarian.

Leave your Canadian or American spectacles behind.

If you can spend two years in Europe go also to Great Britain for a portion of the time; then return for your country's good and let your light shine — no colored spectral light, but the combined white light of a nature developed in all its parts. Be the good physician by being the large man as well as the doctor.

Who touches our human nature on so many sides as the physician, who gets so fully into the inmost recesses of our being? The man that thus enters in should be no barbarian — no mere diagnostician, no mere prescriber or wielder of a scalpel, but a man with a head and a heart.

He should aim to have the fitting outer man which should go with that refinement which when genuine always springs from depths within.

Should some of your number feel in a few years that you have at once the fitness, and the desire to fill some college position you will find no prejudices against you because of youth and immaturity, especially if you have succeeded in getting into print pretty often. It is said the universities do not now so often ask, "What manner of man is the candidate?" as "Is he young and promising?" If you are that, the front door will be open to receive you, and it may be garlanded too.

The older professor, the man whom you are to succeed, makes his exit by a little back gate large enough to allow him to pass accompanied by his hand-baggage. Nobody will know much about it except the new candidates. If he be old enough he may look forward to sufficient to ward off absolute want in the form of a pension as the universities can now spare their purses and consciences through the Carnegie fund.

But such a reward at 65 years! And how many good men and true will never see even this poor promised land.

The only proposal that seems to bear with it the semblance of justice is that of our distinguished graduate, Dr. Osler, who says let there be liberty to retire at sixty or after twenty years of service and with double salary.

Surely a man after serving a university well for twenty years on so small a salary as professors usually receive deserves better than has yet been provided for him! Should he not, with the above-mentioned adequate income, have an honourable place in the councils of the university?

Now, we have been told that the universities are unable to provide for those who have served them long because they must meet the calls for the extension of their work and keep up with the times. Yes,—just like the merchant who says: "You see my rival across the street is building and extending his business. I must keep up with him, so I cannot really afford to pay more than twenty cents on the dollar."

Gentlemen, keep young and promising. Should one grey hair appear — let it be the first and the last. Grey hairs honourable!—Once—but that was some time ago. Now they are doubtfully honourable, and not at all profitable!

But after all, these university questions will personally concern but a few of you; for most of you whom I address to-day the life of the general practitioner of medicine is the one that you will lead. I have tried to remember *that* in what I have said; but I can imagine some of you this evening sitting quietly after all the excitement of this day is over and saying to ourselves—"I wonder, if that professor valedictorian knew how little there is in my pocketbook, would he have taken so high a flight?

Gentlemen, for some years most of the universities have offered their professors ample facilities for understanding and appreciating such financial anæmia as may mark the condition of some present.

But if you be poor in purse all the more need that you be rich in heart and mind.

After all, there is only one kind of real poverty—poverty of soul. This, at least, need not be yours even temporarily.

Allow me to warn you against two evils that seem to me ever to threaten the medical profession—the one, *superficiality* a tendency to be content with mere sense phenomena; the other, what I would name *Corporealism* — the tendency to keep purely to the body and not penetrate to the spirit of man. Against both of these as a prophylactic I would recommend reading and thinking in psychology and philosophy.

But, Gentlemen, I suspect that when writing this address I imagined that you were once more before me a most attentive and sympathetic body of listeners in my class room, and I fear I have thus been led astray and have continued as if fifty-five minutes were, as usual, at my disposal; but I must not forget that portion of the audience further back, not so used to this — not to mention that portion behind, long given to much speaking rather than to listening.

If I would present one idea above others for you to take away with

you, it would be the nobility of your calling and the peculiarly satisfactory nature of the happiness the doctor can give and may himself feel. The opportunities for preventing disease are great.

You may save a city from pestilence as heroes in the past have done from the sword.

You may, and I hope you will, speak out boldly on the causes of degeneration in the human race through unbridled license.

Think, gentlemen, that it will fall to your lot to bring happiness to some of all classes in society — to all ages and conditions of men. You may ease the path of the aged as they descend into the valley; you may restore the father to his place as the head of the family — the mother to hers — perhaps, the most blessed one that this earth knows.

You may put the roses back again into the cheeks of the maiden: you may snatch the infant from the jaws of death and give it back to its mother, and bring to her a joy such as she only can know.

Yes, Gentlemen, yours is a great, a noble profession. Try to be worthy of it.

Farewell.

FILTRATION OF WATER

BY

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Filtration of water has a twofold object:

(1) Elimination of micro- organisms.

(2) Straining off sedimentary matters, and getting rid of colouring material in solution.

Methods adopted to accomplish these ends depend largely upon the state, or condition, of the water before filtration, *i.e.*, one of three classes of water may have to be considered:

(1) A turbid, and perhaps, coloured water, free from dangerous organisms.

(2) A clear water, possibly polluted and containing dangerous organisms.

(3) A turbid water, also polluted, containing harmful bacteria.

The composition, or condition, of the water to be filtered is a most important consideration, and must be taken into account when choosing a plant which is to effect the filtration. Also, it is essential to set before the mind quite clearly, what object or objects must be attained in the filtration, (1) whether the micro-organisms are to be eliminated;

(2) or simply to strain off the sedimentary matters; (3) or a combination of both.

In treating of filtration on a large scale, *e.g.*, that suitable to municipalities, etc., and leaving out of account the filtration schemes applicable to domestic or household use, there are two kinds from which to make a choice: (1) slow sand bed filters; (2) mechanical filters.

The system of "Filtering Galleries" has been left out of consideration, because it has been proved by years of experience, especially in France, where these particular filters were invented and mostly used, that this system is not at all satisfactory. They give out in a very few years, and they cannot be renovated except at an enormous cost. To enumerate the principal points as briefly as possible in connection with the two classes of filters mentioned above.

(1) The slow sand bed filter consists roughly of several layers of differently graded gravel, with a layer of fine sand on top. On the upper surface of the fine sand a "gelatinous" layer forms, and this latter almost entirely constitutes the active filtering agent.

The water is allowed to soak through these layers very slowly, and in its course is thoroughly freed of all suspended matter, including micro-organisms.

The rate of filtration is a minimum of two gallons per square foot per hour, or 2,000,000 gallons per acre per day of 24 hours.

(2) The mechanical filters are classed under two headings: (*a*) The pressure filters; (*b*) the gravity filters.

The difference between these two types is one of mechanical arrangement only,— the actual process of filtration in both is the same for all practical purposes.

It consists of a certain thickness of gravel and sand — the smaller grained particles being uppermost.

Resting on the upper surface of the sand is a layer of gelatinous material, created artificially by adding some patent compound, differing slightly in composition in different types — but it may be said that the basis of all is sulphate of alumina. There are one or two processes in which oxide of iron, and sometimes charcoal, are utilized instead of alum; however, the resulting "coagulum" acts in much the same manner as the alum.

In short, it will be seen that the mechanical process may be described as an imitation of the slow sand bed filtration process, having the advantage of rapid cleansing and replacing of the filtering medium.

The rate of flow through these mechanical filters is much more rapid than through the slow sand bed filter — the rate claimed being

a minimum of 100 gallons per square foot per hour, or 50 times faster than the slow sand bed filter, which can only produce two gallons per square foot per hour.

In other words, four mechanical filters, each 12 feet in diameter, produce nearly as much filtered water in 24 hours as a slow sand bed filter one acre in area.

The rates set down above for mechanical filters are minimum rates, and it should be noted that most makers of these filters claim nearly double these figures for maximum rates.

A comparison of the "working results" of the two main classes of filters is the next step.

(1) Slow sand bed filters:—

Once constructed, these filters last for many years in all their parts except the upper layer of sand, which has to be scraped off and washed from time to time, according to the condition of the water. When the latter is muddy, about once in six weeks or two months; when clear, it may only be necessary once every four to six months. A little of the sand is lost in the washing, but the cost of making up the deficit is infinitesimal.

An expert staff of workmen is not an essential; the supervision of the town engineer being the chief requisite. There is no changing of the filtering bed constituents for varying states of the water. The initial cost of construction is only slightly in excess of a mechanical plant of equal capacity.

The cost of maintenance is less, if anything. The performance of the filter is good. It clarifies the water, and removes a considerable amount of colouring matter, though in neither of these respects does it quite come up to the mechanical filters. Its strong point, when coupled with the foregoing, is the reduction of micro-organisms. This reduction is never less than 98 per cent., unless the filter is not working properly — and 98 per cent. is only a fair result; a good sand bed filter ought, under good supervision, to remove 99 to 100 per cent. of the micro-organisms.

An objection has frequently been raised against slow sand bed filters in this country on the score of freezing. As all these plants are covered in, and below ground, so to speak, they never freeze. It is only the open variety which is subject to this drawback.

(2) The results of the mechanical filters may be described as follows:—

They last on an average 15 to 20 years, and then usually require considerable "repairs." Owing to the process being a mechanical one, constant supervision is very necessary — not so much in the way of

turning taps and valves, as for watching the variations in the state of the water and changing the constituents of the filtering medium accordingly. This is certainly necessary, or otherwise good clarification, let alone reduction of micro-organisms, will not be obtained, commensurate with the production of the required amount of filtered water daily.

Again, very frequent cleansing is essential — when the water is very muddy two cleansings a day are sometimes called for — and under cleaner conditions, the intervals may lengthen out to a few days at the most. However, too much objection must not be put upon this frequent cleaning, because the operation can be carried out so rapidly — but at the same time it necessitates labour which, of course, must be paid for, and it must be skilled labour at that.

The "clarifying" results are excellent, all the sedimentary matters, and nearly all the colouring material in solution, are eliminated.

In this respect they are superior to the slow sand bed filter.

Turning to the biological results, or the power which these filters possess of straining off micro-organisms — here we come to the crucial question in connection with these filters, and one over which so much controversy has been waged during the last year or two.

Adherents of the mechanical filters for this work, sometimes put forward the plea that they have not been sufficiently tested in order to arrive at trustworthy conclusions. However that may be, these filters have certainly been put to official and numerous tests in most countries in Europe and America, to say nothing of non-official tests, which have been instituted on other continents besides Europe and America, *e.g.*, Asia and Africa.

Besides personal experience of these mechanical filters, the reliable official reports from England, France, Germany and the United States are taken as the basis for all the arguments and statements in this article.

In considering bacteriological results of the working of these mechanical filters, great care is needed in the interpretation of the figures reported.

Everything depends upon the rate of flow of the water through the filter — it may be taken as a good working basis "the faster the rate of flow, the less the reduction of micro-organisms in the filtered water."

The same statement holds good when applied to sand bed filters if they are pushed beyond their limits of safety — viz., three or four gallons per square foot per hour — but, curiously enough, no one ever dreams of taxing sand bed filters to this extent — all engineers seem to be quite satisfied with an output of two to two and one-half gallons

per square foot per hour, and on this working, low bed filters accomplish all that is claimed for them.

On the other hand mechanical filters may be made to give any results that may be wished for, provided no attention be paid to the rate of flow of the filtered water.

I have seen these filters give a bacteriological purification of 99 per cent., but then the rate of flow was ridiculously short of that claimed for the filter.

The sum total of all evidence, in short, goes to show that if these filters are worked up to their advertized capacity, then the bacteriological purification averages about 85 to 87 per cent.

By reducing the rate of flow a purification of 90 per cent. can easily be obtained — but then this means more filters to turn out the daily supply of filtered water. The slower these filters are worked the nearer they approach in action to the slow sand bed filter.

In some types, particularly in the "compound gravitation filters," advantage is taken of settling tanks, wherein the water, mixed with the coagulant is allowed to settle for a few hours before being run through the filter bed. Under such circumstances a decided reduction of micro-organisms, as well as sedimentary matter, is accomplished, the former giving 15 to 35 per cent. purification. Some opponents of mechanical filters insist that the addition of "coagulant" to the water, for filtration purposes, results in an increase of the hardness of the filtered water. This increase is so small that their objection is theoretical rather than practical.

Having thus set forth as briefly as is consistent with accuracy the working results of these two classes of filters, it remains only to sum up a few of the principal considerations which would recommend one or the other under particular conditions — chiefly being guided by the results which may be called for as appertaining to the filtered water.

In this respect everything hinges on the natural state of the water to be filtered, as to whether it does, or does not, contain micro-organisms which are dangerous to health when consumed.

If no dangerous organisms be present, then filtration can only be required for "clarification" purposes, *i.e.*, to remove sedimentary matters and colouring material in solution.

To effect this a mechanical filter will serve the purpose quite as well, if not a little better, especially in the removal of colouring matter, than the slow sand bed filter.

Where it is a case of removing micro-organisms, dangerous to health, from the water, then there is no question of the superiority of the sand

bed filter over the mechanical filter. This statement is perfectly true whether the unfiltered water be turbid or clear.

It is obviously the bounden duty of urban and rural authorities to supply to the consumer drinking water which shall be freed, as far as lies in human power, from micro-organisms which are, or might be, dangerous to the public health. To say that a reduction of 85 to 90 per cent. of the organisms in a water, which is known to contain a few dangerous bacteria, is quite sufficient for the safety of the public — such a statement is strongly to be deprecated in the interests of the people. It is true that fewer cases of disease are likely to arise by the consumption of water "three-quarters" purified from harmful bacteria, but surely if the few cases can be prevented by 99 to 100 per cent. purification, then the process of slow sand bed filtration which can effect such results ought to have first attention.

On the 14th of June the Northwestern Sanitarium was opened at Port Townsend. The new institution is under the superintendence of W. R. Simons, M.D., formerly of the Mount Tabor sanitarium at Portland. He has under him an efficient staff of skilled men and one lady physician. The new sanitarium is in a beautiful location. It is situated on a bluff overlooking the Sound, and commands an excellent view of the Cascades and Olympians. The building is equipped with all modern improvements.

The new institution will be capable of accommodating one hundred patients.

The annual meeting of the Lambton Medical Association, was held at Watford, on Wednesday, June 13th. There was a large attendance of members, including Drs. Dunfield, Petrolea, Martyn and Spence, Alvinston; Newell, Bentley, Bradley, Wilkinson and Logie, Sarnia; Morgan, Adelaide; Brown, Camlachie; Reid, Wyoming; Bray, Chatham; Gibson, Kelly and Newell, Watford. The president Dr. P. McG. Brown, of Camlachie, presided, with Dr. Reid, of Wyoming, as secretary. The following papers were read and discussed; "Pain," Dr. Dunfield, Petrolia; Resection of Elbow Joint," Dr. J. L. Bray, Chatham; "Achylia Gastrica," "Third Lobe in Liver," Dr. James Newell, Watford.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

EDITED BY

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Remittances advertisements or business communications are to be addressed to the Montreal Medical Journal Co., Box 273; all others to the Managing Editor, 216 Peel Street, Montreal. All communications intended for insertion in this Journal are received with the understanding that they are contributed exclusively to this Journal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript.

VOL. XXXV. JULY, 1906. No. 7

MEDICO-PSYCHOLOGICAL ASSOCIATION.

The sixty-second annual meeting of the American Medico-Psychological Association was held at the Hotel Vendome, in Boston, from 12th to 14th June, under the presidency of Dr. C. Burr, medical director of Oak Grove Hospital, Flint, Michigan, and was, perhaps, with the exception of the Montreal meeting, held in 1902, the largest and most representative gathering the society has ever had. This is the oldest medical society in America, and one of the most vigorous.

Addresses of welcome were delivered by His Excellency, Curtis Guild, Jr., governor of the Commonwealth of Massachusetts, on behalf of the State, and Dr. G. M. Tuttle, on behalf of the medical profession of the city of Boston, and responded to by the president of the association, after which the regular business of the society was taken up. The programme was a lengthy one, and embraced many papers of great scientific as well as practical interest, chief amongst which may be

mentioned, 'The Colony System in Hospitals for the Insane, by Dr. G. A. Smith, of Central Islip; Family Care of the Insane, by Dr. Owen Copp, of Boston; Care of the Tubercular Insane at the King's Park State Hospital, by Dr. J. I. Mackelway, of King's Park; European Hospitals for the Insane, by Dr. J. C. Clark, of Sykesville, Md. Three papers were set down by Canadian representatives, but only one was read.

Not the least interesting and instructive of the papers presented were the Annual Address, Psychiatry and Experimental Psychology, by Professor Robert F. Woodworth, of Columbus University, and two illustrated lectures, the one, Representation of Various Phases of Epilepsy, and The Paretic Gait, by Doctor Walter G. Chase, of Boston, assisted by Dr. W. P. Spratling, superintendent of the Craig Colony for Epileptics at Sonyea, N.Y.; the other, Idiocy, Hysteria, and Palsy in Classical Pictorial Art, by Dr. L. Pierce Clark, of New York.

One afternoon was devoted to a visit to the new medical school buildings of Harvard University. These are probably the finest and most completely equipped structures of the kind in existence, having been erected through the generosity of J. Pierpont Morgan and J. D. Rockefeller, at a cost of over two million dollars. A second afternoon was spent at the McLean Hospital, Waverley, Mass., perhaps the finest institution for the care of those mentally afflicted on this continent. Here an elaborate and appetizing luncheon was provided for the guests by the directors of the institution, after partaking of which the visitors were shown through the various buildings, the establishment being on the cottage plan and consisting of a number of handsome, widely-separated villas, all beautifully furnished.

The officiers elected for the ensuing year were, Dr. Charles G. Hill, of Baltimore, Md., president; Dr. C. P. Bancroft, of Concord, N.H., vice-president; and Dr. Charles W. Pilgrim, of Poughkeepsie, secretary and treasurer. Dr. A. E. Macdonald, of New York, was selected to represent the association at the meeting of the British Medical Association, to be held at Toronto, in August next, and Washington was fixed upon as the next place of meeting.

THE BRITISH MEDICAL MEETING.

Most encouraging reports are to hand from Toronto of the progress of the arrangements for the annual meeting of the British Medical Association in August. It is perhaps well to reiterate that any practitioner who wishes to attend the meeting, if not previously a member of the as-

sociation, can join it by sending his name, preferably on the form provided by any of the local secretaries, to one of the local officials, or to Dr. F. N. G. Starr, Medical laboratories, University of Toronto, Toronto.

In urging all our readers to attend, we feel that we wield a two edged sword. By a large attendance the medical part of the meeting will be made successful, and of the social part nothing need be said; the committee in charge of these arrangements is a guarantee that the work of entertainment will be well done, and we have heard whispers that indicate that there is money in the toe of the stocking. If you go, therefore, you benefit the association, and we think you will benefit yourself. Are you overwrought, it will rest you: are you not sufficiently busy, it will occupy your time with the acquisition of useful information; is your acquaintance in your own profession limited, you will enlarge it: is it large, you will meet the more old friends. There is no one who is not sure to be well repaid, for it is scarcely necessary to speak of the excellent material which is always brought forward at the meetings of the association, nor yet ought it to be necessary to dwell on the privilege that is ours of entertaining so august a body within our boundaries.

We look back with a degree of complacence, pardonable we hope, to the Montreal meeting a few years ago, and we can honestly hope that the Toronto meeting will be a yet greater success, so that we shall be enabled to bring forward yet another evidence of the medical prosperity of Canada, and the progress that she is making.

As a result of the reorganization of the University of Toronto and Toronto General Hospital by the legislature the Ontario Medical College for Women will go out of existence. Ladies who are entering the medical profession will, therefore, in future receive instruction at the Medical School of the provincial university. The medical faculty has as yet taken no action to provide the requisite facilities for inaugurating coeducation in the college, but the question will be discussed in the near future. It will be necessary to provide special dissecting rooms and other aids to the practical study of the profession for the ladies, and these will be suitable for the use of women taking allied courses in the faculty of arts, such as biology and physics.

The controversy in Queens University over the management of the $50,000 granted by the Ontario Government to the Medical School is at an end. The trustees desired to handle the funds, but the medical men claimed that they should be left in charge of the Medical Faculty.

The present arrangement is that the Trustees will have the custody of the building, and the Faculty will dispose of the funds. This also includes the control of the Department of Biology by the Medical Faculty.

Canadian members of the British Medical Association who intend to avail themselves of the special rate, single fare, $67.25, excursion to the Pacific Coast at the close of the meeting in August, should communicate their intention at once to the General Secretaries, Medical Laboratories, University of Toronto, in order that information may be given to the railways of the probable number for which provision must be made.

With a view to settling the precise meaning of the Ontario Medical Act, the Attorney-General has stated a case for the determination of the Court of Appeal. The precise point at issue is whether persons who practice medicine without the use of drugs can do so without being properly registered. The interests of Christian Scientists and osteopathics are involved, and before the case is argued these persons will be represented.

The British Columbia Medical Association will hold its seventh annual meeting in New Westminster on August 1st and 2nd, 1906. It is expected that a number of medical men from the neighbouring state of Washington will be present. The subject of patent medicines and life insurance fees will be discussed.

At the close of the Meeting of the American Medical Association in Boston a party of fifty members proceeded upon a trip through the Maritime Provinces, which must have been productive of much pleasure and instruction.

THE BRITISH MEDICAL ASSOCIATION.

Toronto Meeting, August 21st to 25th, 1906.

Considerable progress has been made with the arrangements for that notable event, the meeting of the British Medical Association in Toronto in the closing part of August. From the inquiries that are being received from every part of the continent, as well as from the British Isles, it is evident that a very large attendance will be recorded at this meeting. Over 200 members resident in the British Isles have

already asked for accommodation and in many cases they will be accompanied by members of their families. The Association will be convened under thirteen sections, which will meet daily from 9.30 to 1 o'clock. The afternoons and evenings will be devoted to general meetings, public addresses and various entertainments. There will be three public addresses delivered. Sir James Barr will present the address in Medicine, his topic being, "The Circulation viewed from the peripheral standpoint." Dr. W. S. A. Griffith will deliver the address in Obstetrics, Sir Victor Horsley the address in Surgery, and it is just possible that a public address will be delivered by Dr. Marie, of Paris. It is intended that clinics shall be held each morning at 8.30, when interesting cases will be reviewed by some of the prominent physicians and surgeons in attendance. Considerable advance has already been made in arranging for the work of the sections.

Anatomy:—The section of Anatomy will be under the presidency of Dr. Arthur Robinson, of Birmingham. Papers have been promised by the following:—Dr. C. R. Bardeen, University of Wisconsin, Madison, Wis.: Prof. G. C. Huber, University of Michigan, Ann Arbor, Mich.: Prof. J. P. McMurrich, University of Michigan, Ann Arbor, Mich.; Dr. Ross E. Harrison, Johns Hopkins, Baltimore, Md.; Dr. H. Knower, Johns Hopkins, Baltimore, Md.; Dr. G. L. Streeter, Johns Hopkins, Baltimore, Md.

It is also possible that Prof. Mall, of Johns Hopkins, Baltimore; Prof. C. S. Minot, Harvard Medical School, Boston; Dr. E. A. Spitzka, New York, and Dr. R. R. Bensley, of Chicago, may communicate papers.

Laryngology and Otology:—The section of Laryngology and Otology will be under the presidency of Dr. J. Dundas Grant, of London, and will have three or four principal topics for discussion:—1. "Operations for the corrections of deviations of the Nasal Septum." (Discussion to be opened by Dr. St. Clair Thompson, of London). 2. "Laryngeal disturbances produced by voice use." 3. "The indication for ligation of the Jugular Vein in Otitic Pyæmia." 4. "The Diagnosis and Treatment of Ethmoidal disease."

Each discussion will occupy about two and a half hours, the remainder of the day being devoted to papers. It is just possible that Dr. Logan Turner will open the discussion on "Ethmoidal Disease."

Medicine:—Tuesday, August 21st.—"Blood Pressure in its relation to Disease." (*a*). Physiological Introduction. (Dawson, of Baltimore). (*b*). Clinical Methods of determining Blood Pressure; their uses and limitations (Geo. Gibson, Edinburgh). (*c*). Pathology and Therapeutics of Blood Pressure (Sir Wm. Broadbent). Also probably a paper

on the subject by Clifford Allbutt, and one or two others, including one Canadian.

Wednesday, August 22nd.—Discussion in junction with the section of Physiology upon "Over and Under Nutrition, with special reference to Proteid Metabolism"—Introduced by Chrittenden. Other special speakers:—Herter, Starling, Hutchison, Francis Hare, A. Haig, and others.

Thursday, August 23rd.—Papers from William Osler, on Heart Block. J. MacKenzie, on Heart Block; Erlanger, on Heart Block. Other papers, L. F. Barker, A. Stengel, A. McPhedran.

Friday, August 24th.—Papers devoted to Neurological subjects, W. G. Spiller, "Syringomyelia"; J. J. Putman.

The following gentlemen have signified their intention to contribute to the section:—Dr. J. J. Putman, Boston, Mass.; Dr. W. G. Spiller, Philadelphia, Pa.; Dr. Alfred Stengel, Philadelphia, Pa.; Dr. Barber, Baltimore, Md.

—*Obstetrics and Gynæcology*:—The section of Obstetrics and Gynæcology is under the presidency of Dr. A. H. Freeland Barbour, of Edinburgh. The following is the programme suggested:—

Tuesday.—Discussion on "Hyperemesis Gravidarum," opened by Dr. J. C. Cameron, Montreal.

Wednesday.—"The changes in Uterine Fibroids after the Menopause with special reference to operations."

Thursday.—Subject for discussion and opener to be selected by Dr. Barbour.

Papers.—"Uterine Myomata and their degenerative changes," T. S. Cullen. "Sectional Anatomy of Labour" (Lantern demonstration), A. H. F. Barbour. "Condition of Ovaries in normal and abnormal Pregnancy" (Lantern demonstrations), C. Lockyer.

Surgery:—The section of Surgery is under the presidency of Sir Hector Clare Cameron, M.D., Glasgow. The following is the programme suggested:

Tuesday.—"Enucleation of the Prostate Gland." Reader—Dr. Bingham, Toronto.

Wednesday.—"Treatment of Ascites secondary to Chronic Hepatitis."

Thursday.—"Surgical Treatment of Ulcer of the Duodenum." Reader—Dr. W. J. Mayo, Rochester, Minn.

Friday.—"Treatment of Acute Septic Peritonitis."

Pædiatrics:—The section of Pædriatics is under the presidency of George A. Sutherland, M.D., London. The following is the programme suggested:

Tuesday.—Discussion on "Congenital Pyloric Stenosis." The medical aspect of the subject will be introduced by Dr. Edmund Cautley (London), and the surgical aspect by Dr. Harold Stiles (Edinburgh).

Wednesday.—Discussion on "Pneumococcal Infection." The medical aspect will be introduced by Dr. Henry Ashby (Manchester).

Thursday.—A Symposium on "Entero-colitis." The subject will be taken up under the following headings: (*a*). Etiology; (*b*). Pathology; (*c*). Symptoms; (*d*). Diagnosis and Prognosis; (*e*). Medical Treatment; (*f*). Dietetic Treatment.

Friday.—A Discussion on "Rheumatism."

Psychology:—The section of Psychology is under the presidency of Wm. Julius Mickle, M.D., London. It has been arranged to have four discussions, one each day of the sectional meetings. The subjects are:—

Tuesday.—"General Paresis."

Wednesday.—"Classification of Insanity."

Thursday.—"So-called Mental Degeneracy."

Friday.—"Dementia Præcox."

The leaders and those chosen to discuss these subjects will be eminent British, American and Canadian Psychologists and the President, Dr. Mickle, is expected to present the first paper, as he is a recognized authority on general paresis. The second subject chosen will be one of great interest to both countries, as it is a question now under general discussion.

A series of papers will also be presented, and the following Canadians have already signified their intention to take part:—Dr. C. K. Clark, Toronto; Dr. Ryan, Kingston; Dr. Moher, Brockville; Dr. Shirres, Montreal; Dr. Daniel Clark, Toronto.

State Medicine:—The section of State Medicine is under the presidency of Dr. F. Montizambert, of Ottawa. The following programme has been arranged:—

Tuesday.—"The Prevention of Tuberculosis."

Wednesday.—"Water Supplies."

Thursday.—"The Hygiene of Homes and Educational and Industrial Institutions."

Friday.—"International Sanitary Protection."

Guests:—Prof. Brouardel, member of the Institute and the Academy Medicine of France; Dr. Martin, City Health Officer of Paris, France; Dr. Letulle, Professor of the Medical Faculty of Paris; Dr. Liceaga, Sanitary Adviser of the Government of Mexico, Mexico; Dr. Wyman, Surgeon-General of the United States Public Health and Marine Hospital Service, Washington.

Therapeutics.—The section of Therapeutics is under the presidency of Donald MacAllister, M.D., Cambridge. The following is the programme arranged:—

Tuesday.—"The Study of the Kidney." (*a*). Its Physiology and Pharmacology; (*b*). The Therapeutics of Acute Nephritis; (*c*). The Treatment of Chronic Nephritis; (*d*). The Treatment of Uræmia.

Wednesday.—"Serum Therapy."

Thursday.—"The place of Materia Medica and Therapeutics in the Medical Curriculum."

Friday.—"The Value of Alcohol in Therapeutics," Dr. A. D. Blackader, Montreal. "The Teaching of Pharmacology." "The Teaching of Therapeutics."

Pathology and Bacteriology:—The section of Pathology and Bacteriology, under the presidency of Prof. J. G. Adami, M.D., F.R.S., Montreal, have made the following preliminary arrangements:—

Tuesday.—"Nuclear Physiology and Pathology." To be opened by Professor Adami and Dr. Macallum.

Wednesday.—"Etiology and Life-History of Malignant New Growths."

Thursday.—"The Forms of Arteriosclerosis, their classification and experimental production."

Friday.—Papers upon "Pathogenic Protozoa," by various workers. Papers have been promised by Prof. Aschoff, Marburg, Germany; Prof. Novy, Ann Arbor; Dr. Pearce, Bender Laboratory, Albany; Dr. Bushnell; Prof. Grunbaum; Prof. Calder, Leith; Dr. Oskar Klotz, Montreal; Prof. J. J. MacKenzie, Toronto.

The American Association of Pathologists and Bacteriologists have been formally invited to be present, and a number of the members will likely attend.

Dermatology:—This section will meet under the presidency of Dr. Norman Walker, of Edinburgh, who will open the section by an address on "The Teaching of Dermatology." During one of the days of the meeting there will be a discussion on the subject of "Eczema," to be opened by Dr. A. J. Hall, of Sheffield, Eng. A paper on "Psoriasis and Light," has been promised by Dr. J. N. Hyde, of Chicago. Papers will also be given by Dr. Gilchrist, Baltimore; Dr. A. R. Robinson, New York; Dr. Elliott, New York.

Physiology:—The section of Physiology will meet under the presidency of Prof. W. D. Halliburton, M.D., F.R.S., London. The following programme has been arranged:—

Discussions.—1. Discussion in junction with the section of Medicine on "Over Nutrition and Under Nutrition, with special reference to

Proteid Metabolism in Health and Disease." 2. Discussion in junction with the section of Pathology on, "The Rôle of the Nucleus in Nutrition."

Papers.—Dr. S. P. Beebe, New York, on "Serum under the Influence of injected Nucleo-proteid." Prof. T. G. Bordie, F.R.S., London, on "The Functions of the Renal Tubules and Glomeruli." Prof. F. Gotch, F.R.S., Oxford, on "Demonstration of the Spinthariscope." Prof. W. B. Hall, Chicago, on "New Apparatus." Prof. W. D. Halliburton, F.R.S., London, on "Proteid Nomenclature." Prof. C. F. Hodge, Worcester, Mass., on "Structures and Physiological Functions of Amœba Proteus." Prof. C. F. Hodge and M. F. Duncan, Worcester, Mass., on "Differentiation of Contractile Protoplasm." Prof. W. H. Howell, New York, on "Physiology of Heart." Prof. G. C. Huber, Ann Arbor, on "Physiology of Renal Tubules." Dr. G. T. Kemp, Champaign, Ill., on "Blood-platelets." Dr. Louis Lapicque, Paris, on "Electrical Excitation of Nerves and Muscles." Prof. J. S. Macdonald, Sheffield, on "Structure and Functions of Nerve Fibres." Prof. J. J. R. MacLeod, Cleveland, on 'Experimental Glycosuria." Dr. Gustav Mann, Oxford, on "A Plea for Microphysiology." Prof. B. Moore, Dr. M. Edie, Dr. Spence, and Dr. H. E. Roaf, Liverpool, on "Experimental Glycosuria." Prof. B. Moore, E. Whitley, and Dr. H. E. Roaf, Liverpool, on "Effect of Ions on Growth and Cell Division." Dr. F. W. Mott, F.R.S., London, on "The Functional Significance of the Convolutional Pattern in the Primates." Dr. Maurice Nicloux, Paris, on "Chloroform Anæsthesia and a Simple Method of Estimating Chloroform." Prof. C. S. Sherrington, F.R.S., and Dr. H. E. Roaf, Liverpool, on "Lock-jaw."

Papers are also promised by the following:—Dr. Harvey Cushing, Baltimore; Dr. P. T. Herring, Edinburgh; Dr. F. G. Hopkins, F.R.S., Cambridge; Prof. Waldemar Koch, Columbia, Mo.; Dr. S. J. Meltzer, New York; Dr. Sutherland Simpson, Edinburgh; Prof. L. B. Mendel, New Haven; Prof. Porter, Boston; Prof. Jacques Loeb, Berkeley, Cal.

Paper by Prof. F. S. Lee, New York, on "The Causes of Fatigue in Certain Pathological States."

Ophthalmology:—The section of Ophthalmology will meet under the presidency of Robert Marcus Gunn, F.R.C.S., London. The following provisional programme has been arranged:

Tuesday.—"Rare Forms of Choroiditis."

Wednesday.—"Sympathetic Ophthalmia."

Thursday.—"Affections of the Lacrimal Passages."

Friday.—"Visual Tests for Marine and Railroad Service."

Most of the buildings of the University will be utilized in connection with the meeting. On the ground floor of the Main Building, in addition to the Post Office and Reception Rooms, there will be rooms for the regular meetings of some six or eight sections. The second floor, in addition to special offices for the Secretariat and the Editor of the *British Medical Journal,* will be devoted almost entirely to the Museum, which will afford some 12,000 square feet for exhibitors. Already a large amount of this space has been disposed of to leading manufacturers of instruments and drugs in Great Britain, the United States and Canada. This alone will be one of the most interesting parts of the Association to Canadian visitors. Accommodation for other sections will be provided in rooms closely adjoining the Main Building. It is expected that the new Convocation Hall will be completed in sufficent time to enable the ceremonies of the official reception, on the evening of the 21st of August, and the public addresses to take place there. Already the committee is actively engaged in providing accommodation for the host of visitors that is expected. Queen's Hall, Wycliffe College, Annesley Hall, the Fraternity houses and other buildings adjacent to the University will probably be utilized, and many of the citizens are already offering their hospitality. The Committee on Entertainment have a most excellent programme prepared. One of the interesting features of which will be an excusion to Niagara Falls, at the invitation of Sir Henry Pellatt. Owing to the exceptionally favourable travelling rates, which have been obtained over the Canadian lines of steam and rail, the attendance will be made very easy and physicians wishing to avail themselves of the privileges of this meeting should communicate with the secretaries at an early date, in order to obtain accommodation.

Reviews and Notices of Books.

THE BIOLOGY OF THE FROG. By SAMUEL J. HOLMES, Ph.D., Assistant Professor of Zoology in the University of Wisconsin. The Macmillan Company, New York.

We are pleased to hear that the Macmillan Co., of New York, along with Macmillan & Co., of London, have established a Canadian agency in Toronto, under the name of "The Macmillan Co. of Canada." We wish their new venture every success.

It has been truly said that the physiologist owes more to the frog than to any other animal, and, after perusing this very interesting book, one is more than ever convinced that such is the case.

In three hundred and seventy well illustrated pages it gives us a most delightful and satisfactory account of these "quaint uncouth dreamers." The frog is here described from every conceivable point of view.

The first chapter is taken up with Mr. Frog's family history, and we are told that he belongs to the class of amphibians, and that the order of anura in which his family holds a prominent place is distinguished from other existing orders by the fact that it members possess legs but not tails. We are then given the peculiarities of tongue, tooth and skeleton by which the various families of frogs and toads are distinguished from one another.

The second chapter discusses the habits and natural history of the frog. We are here told about his voice, of which our Canadian poet Lampman has written so beautifully

"It could not choose, but seem
"That earth, our mother, searching in what way
"Men's hearts might know her spirit's inmost dream,
"Ever at rest between life's change and stir,
"Made you her soul, and bade you pipe for her."

Other sections of this chapter tells us about the breeding instincts, the colour changes in the skin brought about by the extension and retraction of pigment granules in at least three different kinds of pigmented cells, the power of regeneration after injuries which is so great in tadpoles that they can reproduce a tail or even a limb, but which, in the fully developed frog is comparatively limited, and finally the phenomena of hypnotism.

Succeeding chapters deal with the general structure of the frog and with his histology, embryology, and physiology. The account given of the physiology of the digestive organs, metabolism, internal secretion and other functions of the frog might be applied with little change to the higher animals and to man himself.

The closing chapters deal with the instincts and intelligence of the frog. Having certain sins against Mr. Frog on our conscience, we are pleased to note that he does not get angry.

The book is well conceived and well written. We think that it forms a very satisfactory introduction to either biology or physiology. It might be used to advantage by the senior classes in a high school, or by the junior students in a university; we strongly recommend it to all teachers who deal with the subjects embraced in it as we feel sure that they could not read it without much satisfaction and profit.

W. S. M.

A Treatise on Surgery. By George K. Fowler, M.D. Two imperial octaves of 725 pages each, with 888 text illustrations and 4 coloured plates, all original. Philadelphia and London, W. B. Saunders Co., 1906. Canadian agents, J. A. Carveth & Co., Limited, Toronto.

Per set, cloth $15.00; half morocco, $19.00 net.

The first volume is to hand and embraces what is usually included under the head of the principles of surgery. Special attention is given to the subject of inflammation from the surgeon's point of view, due consideration being accorded the influence of traumatism and bacterial infection as predisposng and exciting causes of this condition. Injuries and diseases are first considered in their effect upon the various separate tissues and then taken up more fully in those chapters dealing with the really clinical portion, regional surgery. Throughout, special attention has been given to diagnosis, and a very excellent section on laboratory aids by Dr. F. E. Sanders included. The text is elaborately illustrated with entirely new and original illustrations, and evidently neither labour nor expense has been spared to bring this feature of the work up to the highest standard of artistic and practical excellence. We regret that the author has not considered it necessary to go more fully into the etiology of the various diseases. This lack of discussion is especially felt in the consideration of malignant disease and congenital malformations. Another objection is to the advice given regarding the simple removing of a V shaped piece of tissue for epithelioma of the lower lip in any condition save the so-called precancerous state, holding, as we do, the belief that in such cases, and here we refer to early cases, glandular involvement though not palpable by external means is almost certain to be revealed by incision. The results obtained in tongue cases by such men as Butlin, Cheatle and others show the author's prognosis to be unfairly gloomy. On the other hand, the article on malignant disease of the breast is thoroughly up-to-date. We look forward with pleasure to the reviewing of the second volume which is soon to appear.

W. T. B.

New Serum—Therapy. By D. Montgomerie Paton, L.R.C.S. & P. Edin. Baillière, Tindall and Cox, London, J. A. Carveth & Co., Toronto $1.50.

During the past eight years the writer has used over 3,333 ounces of anti-diphtheritic serum and 40 gallons of simple plasma of the horse, sheep, and ox. This seems to be considerable quantity. The new serum-therapy appears to consist in the administration of anti-diph-

theritic serum for other conditions than those commonly arising from the operation of the Klebs Löffler bacillus. Near 300 cases are quoted ranging from thrombo-phlebitis to arthritis deformans, all of which were remedied or improved by this new therapy. We hope that it was so, but fear that, when the method is subjected to the spirit of unbelief, the results in other hands will not be so satisfactory.

THE PRACTICAL MEDICINE SERIES: EDITOR GUSTAVUS P. HEAD. 1906. The Year-book Publishers, 40 Dearborn St., Chicago.

This series of ten volumes, issued at about monthly intervals covers the entire field of medicine and surgery,each volume being complete for the year prior to its publication on the subject of which it treats. The series is published primarily for the general practitioner, at the same time the arrangement in several volumes enables those interested in special subjects to buy only the parts they desire. The price of each volume is two dollars, of the series, ten dollars. Three volumes are before us. Volume I is upon General Medicine, and is edited by Frank Billings and J. T. T. Salisbury. Volume II is upon General Surgery, and is edited by John B. Murphy, Volume III is upon the eye ear, nose, and throat. The editors are Casey Wood, O. H. Andrews and Gustavus P. Head. This series has been frequently commended for its skilful editing. The present volumes are entirely praiseworthy, and each department is conducted by a Master in the particular field. The book is not an affair of words and will appeal to persons of educated taste.

A LABORATORY GUIDE IN BACTERIOLOGY. By MR. T. CONNELL, M.D., Professor of Pathology, Queen's University, Kingston. Second Edition, R. Uglow & Co. Kingston.

Nothing of special value has been omitted from this guide for students; and the directions are so ordered and specific, that an intelligent worker can perform the technique of the various operations in bacteriology. The appearance of a second edition is another evidence of the activity of this Medical School.

Introduction to Materia Medica and Pharmacology, including the Elements of Medical Pharmacy, Prescription Writing, Medical Latin, Toxicology and Methods of Local Treatment. BY OLIVER T. OSBORNE, M.D., Professor of Materia Medica, Yale University, 167 pages. Cloth, $1.00, *net*. Lea Brothers Co., Publishers, Philadelphia and New York, 1906.

The book commences with a short section on experimental pharmacology intended as an introduction to the laboratory course. The next

section, on the action of the important drugs, is arranged alphabetically to allow the instructor free choice of the drug he will demonstrate and furnishes to the student a convenient reference to the physiological action of each drug. The section on pharmacy explains the important preparations of the United States pharmacopœia. The doses are given in both systems and preparations are grouped according to the size of the doze. The sections on poisoning, weights and measures, latin abbreviations, prescription-writing and dosage are all of import ance to the future practitioner of medicine and receive the attention which they deserve. The latter part of the book, which briefly describes the various methods of locally treating different parts of the body, will be found exceptionally valuable.

Clinical Bacteriology and Haematology. By W. D'Este Emery M.D., B.Sc., Lond., Pathologist to King's College Hospital, R. K. Lewis, 136 Gower St., W. C., 1906. Price 7|6 net.

This the newest volume in "Lewis's practical series," and is the second edition of "a hand-book of bacteriological diagnosis for practitioners" by the same author. It impresses upon the practitioner the value of the information which is obtained by bacteriological examination, and does something to instruct him in the art . The section upon hæmatology is of especial value, and is done with reference to the bed as well as to the laboratory. The book is entirely fresh, and is done by a man of wide education.

Minor and Operative Surgery, including Bandaging. Henry R. Wharton, M.D. Sixth edition, enlarged and thoroughly revised, with 532 illustrations. Lea Brothers & Co., Philadelphia and New York, 1905.

Most of the books of this order confine themselves to bandaging and minor surgical procedures. Owing to the increased attention now paid in medical schools to operations on the cadaver, and the importance of this method of instruction, the author has been led to include in the present edition such procedures as, in his opinion, will prove most useful to the student. On the whole, this selection is a very admirable one, considering the amount of space it is possible to allot to such a subject in this class of book. Special mention must be made of the article on asepsis and antisepsis, comprising, as it does, the most generally accepted and recent methods employed in this important part of surgery.

Medical News.

ROYAL VICTORIA HOSPITAL.

Patients admitted during May, 1903, 361; discharged, 269; died, 13. Medical, 97; surgical, 110; ophthalmological, 24; gynæcological, 27; laryngological, 26. Out-Door Department: Medical, 911; surgical, 886; eye and ear, 306; diseases of women, 107; nose and throat, 357. Total, 2,567. Ambulance calls, 96.

The personnel of the staff of the St. John Public Hospital is as follows: Dr. Murray MacLaren, Dr. T. D. Walker, Dr. W. W. White, Dr. A. F. Emery, Dr. W. A. Christie and Dr. Stewart Skinner. Out patients will be looked after by Dr. J. H. Scammell and Dr. A. A. Lewin. Dr. J. R. McIntosh and Dr. G. R. J. Crawford will continue to act as oculists to the institution, and Dr. G. A. B. Addy was reappointed pathologist.

Plans have been prepared for the new Railway, Marine and General Hospital at Fort William. The approximate cost will be $25,000. The hospital will have kitchens and lavatories on every floor, electric elevators, dumb waiters, steam laundry rooms, a large drying room, equipped with all modern drying appointments, cold storage rooms, and fumigating rooms.

The semi-annual meeting of the County of Shefford Medical Association was held at Waterloo, on Thursday, May 17th. Dr. Cowley, president, opened the meeting at 3.30 p.m. Dr. Lee W. Martin read a paper on "Infant Feeding in Difficult Cases." The following officers were elected — President, Dr. Brun; 1st Vice-Pres., S. H. Martin; 2nd Vice-Pres., C. P. Verdon; Secretary, L. A. Lessard.

On the 15th of May the formal opening of the Grace Rescue Hospital in Winnipeg was held.

The death is announced of Dr. William D. Currie of Sydney Mines at Brooklands Hospital, Sydney. He was the son of the Rev. Dr. Currie of Pine Hill College, Halifax, and the cause of death was acute pneumonia.

The death is announced at Brantford of Dr. James W. Digby, who died on the 29th of May. He was 61 years of age and a son of the late Dr. Alfred Digby. Educated at Toronto University and at McGill

Medical College he graduated in 1862 and practiced in New York hospitals and as Union surgeon in the American civil war.

Dr. Reuben Curry, of Guelph, died on the 10th of May. He was one of the oldest practitioners of that district.

Dr. James Parker, one of the oldest practitioners of Leeds County, died on the 7th June, at Westport, in the 66th year of his age.

The death is announced of Dr. Joseph Henry Widdifield in Toronto, Sherriff of York County.

Dr. C. A. Sippi, bursar of the London Insane Asylum since 1888, died May 16th after an illness extending over two or three years.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

GEORGE WOOLSEY, M.D. "Observations on the Diagnosis and Treatment of Typhoid Perforation." *Annals of Surgery,* May, 1906.

Perforation occurs in 2.5 to 3 per cent. of all cases of typhoid. It has been estimated that fully one-third of the mortality of the disease is due to perforation, and that the mortality of these cases subjected to operation is about 95 per cent. In other words, something like 25,000 die annully from perforation, one-quarter of whom might be saved if operated upon promptly. The present paper is based on a study of 18 cases operated upon during the last 10 years in the Presbyterian Hospital.

Pain coming on suddenly and severe in degree was found to be by far the earliest and most constant symptom. Tenderness and rigidity were next in frequency. Regarding these two symptoms we must bear in mind that they are generally dependent upon the peritonitis rather than on the perforation itself. Vomiting was not as frequently present as we might have expected.

The formerly much talked about symptom, the initial fall of temperature was not noted in any cases; on the contrary, rise of temperature, pulse and respiration was the rule. Fall in temperature must now be regarded as among the late symptoms, and is the expression of absorption of infective material, and hence an unfavourable symptom. Distension, tympanites, loss or lessening of liver dulness are late and variable symptoms. The leucocyte count was not of much assistance.

We agree with the writer in laying special importance upon the value of severe pain of sudden onset in the lower half of the abdomen as an early sign of perforation and its increased value as an indication for operation when associated with localized tenderness and rigidity; he emphasizes the importance of exploratory operations in case of doubt, in view of the good results which follow if no perforation is found, and of the earlier period at which operation is done if perforation is present.

It was found that cases of perforation in children give double the per cent. of recovery, and that those ocurring during a relapse or convalescence have a more favourable prognosis. The prognosis in cases of perforation in the large intestine is worse, and they have been overlooked altogether.

A general anæsthetic is preferred, the incision made through the right rectus, the abdominal cavity irrigated with a large amount of hot saline through a large Chamberlain tube, and drainage secured either by a large cigarette drain or by a large rubber tube split down the side with a core of gauze, and the patient put in the Fowler position.

HENRY PERCY DEAN, M.S., Lond., F.R.C.S., Eng. "The Importance of Anæsthesia by Lumbar Injection in Operations for Acute Abdominal Diseases. *Brit. Med. Jour.*, May 12, 1906.

This new anæsthetic is the chlorate of one of the amino-alcohols and goes by the name of Stovaine. Its chief physiological differences from cocaine is that it is a vaso-dilator and seems to have a tonic effect upon the heart. A short report of six cases is given, four of which were for acute conditions, three for septic peritonitis due to appendicitis, one for volvulus of the sigmoid. In five cases it produced satisfactory results, but in the volvulus case the man died of respiratory paralysis. In this case there was only a drop of cerebro-spinal fluid seen on puncture, and the explanation given is that there was not enough cerebro-spinal fluid to dilute the drug sufficiently, and hence the more intense effect. In such cases he would dilute the stovaine with physiological solution before injecting it and would inject it very slowly. Surgical shock appears to be very much lessened; this was especially seen in the abdominal cases and in one for sarcoma of the testicle necessitating wide removal of tissues. In three of the cases the development of anæsthesia was accompanied by free passage of flatus and fæces, so that the formerly distended abdomen became flat. The minimal dose that can be given without fear of respiratory paralysis is half the ordinary capsule, that is, 0.5 c. cm. of the solution. If anæsthesia is required low down in the leg, often as little as 0.3 c. cm.

is sufficient. Chaput gives 0.4 as the first dose, and a subsequent dose of 0.3 if required, at the end of ten minutes. The writer begins with 0.6 c. cm. and gives another dose of 0.3 c. cm. at the end of seven minutes if necessary. He lays special stress upon the vital importance of the graduated dosage in all acute abdominal cases. Anæsthesia commences with a numbness of the perineum, feet and legs in about three minutes. By the end of five minutes the patient is usually unable to lift either leg, but can move the toes or ankles. Within seven minutes he is usually anæsthetic up to the groin, and the maximum effect, whatever the amount of the dose, is nearly always produced in ten minutes. The apparatus used by the writer is simple and easy to employ. The after effects are said to be trivial, a slight headache, while the morality is by no means so large as with general anæsthetics.

George Emerson Brewer, M.D. "The Surgical Treatment of Chronic Dyspepsia." *New York Med. Jour.*, May 19, 1906.

This article deals with the advance in the surgical treatment of gastric cancer, ulcer, and benign pyloric stenosis. Gastric cancer is said to constitute about 40 per cent. of all carcinomata, and to occur is about one of every fifty individuals. A review of statistics of twenty of the most prominent modern operators, comprising over 600 pylorectomies and partial gastrectomies shows a gradual lowering death rate as the technique of the operations has been improved upon and the cases have been operated upon earlier in the course of the diseases. Thus, Kocher in his last thirty-seven cases had a mortality of seventeen per cent., von Eiselberg twelve per cent. Mayo in his last forty pylorectomies a mortality of only five per cent. These are for the immediate results of the operation and show a very encouraging improvement. The late or end results have also improved, thus Kocher had twelve per cent. alive and well from three to sixteen years, eleven more than two years, and seventeen more than one year, after operation, and Eiselberg has fifteen per cent. alive more than two years, while Mayo has ten per cent. passed the three year limit. In a private communication Hartmann regarded his results in cancer of the stomach as equal to those of the breast. As for ulcer of the stomach and duodenum it is now recognized as being much more frequent than formerly taught, and when we compare the end results of medical treatment, leaves much to be desired. Thus, Greenough and Joslin made a careful analysis of 187 cases treated at the Massachusetts General Hospital and found the immediate results to be cured eighty per cent., relieved eighteen

per cent., unrelieved nine per cent., died eight per cent. Of this number 114 were followed up and the end results were found to be forty per cent. remaining well at an average time of five years, thirty-six per cent. had recurrence of symptoms, twenty per cent. died from ulcer, and four per cent. from unknown causes. These figures show how misleading the ordinary hospital statistics are, that while eighty per cent. are undoubtedly relieved as a result of intelligent treatment, only about forty per cent are cured; that while the death rate during the first attack may be eight per cent. or less, the real mortality is about twenty per cent., so that about sixty per cent. of gastric ulcer cases must look forward to death or chronic invalidism. In contrasting these results with the end results of surgical treatment we must bear in mind that many of the cases operated upon were complicated by pyloric stenosis, and that quite a number were operated upon as a last resort when they were not in good condition for operation. Still Eiselberg reports forty-seven per cent. well on an average of four years, when a posterior gastro-interostomy was performed; Munro reports fifty per cent. treated by the Tinney operation, permanently well, forty per cent. by the long and sixty-six per cent. by the short loop posterior anastomosis; Moynihan gives only two failures in 151 operations, both due to faulty technic and cured by a secondary operation. The writer advises intelligent medical treatment for all primary cases of simple round ulcer; if not relieved after six weeks of this treatment, operation should be advised; while in all cases of indurated chronic ulcer, and in all cases of recurrent symptoms after a primary cure, he would operate.

The part played by ulcer in the production of cancer is brought out by Mumford, who found a history of ulcer in 41 cases out of 50 of malignant disease of the stomach. Again, the percentage of cancer occurring in the pyloric region is approximately that of ulcer, and this holds good also for the greater curvature and cardia.

In benign pyloric stenosis surgery has given most excellent results; thus Eiselberg had ninety per cent. well on an average of two years, and Mumford collected 169 cases of ulcer and its sequelæ, and found the end results in 147 to be seventy-one per cent. permanently relieved, fifteen unrelieved, and deaths 8.9 per cent. Mayo Robson in 500 gastric operations reported his mortality in gastro-enterostomy for non-cancerous conditions to be .37 per cent., with 92 per cent. of cures in cases of hæmorrhage and stenosis from chronic ulcer. Hartmann's mortality was 6 per cent., and his end results 92 per cent. Rotgans had a mortality of 5 per cent. and end results of cures in 85 per cent.

ROBERT W. LOVETT, M.D. "Remarks on the Infections of Joints." *Boston Med. and Surg. Jour.*, May 24, 1906.

Acute joint infections fall in four groups: Acute osteomyelitis of the articular end of the long bones involving the joint secondarily, acute suppurative synovitis or joint abscess as a result of direct infection as in wounds and also in the course of many of the infectious diseases, acute plastic synovitis leading to joint obliteration as in gonorrhœa, and acute serous synovitis. Tuberculosis and chronic joint disease are not included in this classification. The first three divisions are now well understood, but the latter, generally classed under the name of articular rheumatism, is exciting a great deal of interest at the present time. The case now stands as follows: the synovitis of acute rheumatism does not differ clinically or pathologically from the synovitis of infectious diseases, except that it is more benign. It can be produced by the injection of cultures of pyogenic organisms, and pyogenic organisms have been found in the joint effusions. The specific character of these has not been accepted. No satisfactory explanation of rheumatism has ever been offered, and the history of late years shows a steadily larger number of "rheumatic" cases constantly being classed among the infections. It cannot yet be regarded as a specific infectious disease, but the evidence rather tends to identify it as an "attenuated pyæmia." The evidence is not yet conclusive and the fact that the symptoms are so readily controlled by salicylic acid in many instances is not in accord with what we know of infections. Acute infections of the joints of undoubted bacterial origin occur in all grades of severity in connexion with many infections. As a rule, any one of two or three types of joint inflammation may occur in connection with any one infection. In many cases the source of infection cannot be established, and in such cases the importance of remembering the function of the tonsils and the presence of pyogenic organisms in the mouth as a ready source of infection is of importance.

W. L. B.

MEDICINE.

UNDER THE CHARGE OF JAMES STEWART, F. G. FINLEY, H. A. LAFLEUR AND W. F. HAMILTON.

BOAS, I. "On the Prophylaxis of Gastric Hæmorrhage." *Deutsche Med. Woch.*, No. 18, 3rd May, 1906.

The author lays much stress upon the recognition of preliminary hæmorrhage probably of small amount, preceding a serious hæmorrhage in

ulcer of the stomach. This, he declares, is the necessary point of departure in attaining a prophylactic treatment. In fifteen months, he saw in private practice, 82 certain and 60 probable cases of ulcer of the stomach. In 58 per cent. of these blood was found in the stools, and in 74 per cent. of a large series of cases reported by Siegel. The question arises, Do these slight hæmorrhages lead in the majority of cases to later manifest hæmorrhages? From experience directed to this question for five year, Boas answers unhesitatingly, Yes! These slight hæmorrhages appear only by the dark colour of one or two stools, and are generally described by the patient as such. Such evidence is not sufficient; but should, Boas says, be the indication for a closer watch for the repetition of it that will likely occur. For the recognition of blood, the guiac-turpentine, the aloin of the spectroscopic test will answer perfectly well. When blood has been recognized, treatment will be directed first, to stopping the hæmorrhage, and, secondly, where possible, to cure the underlying cause of the hæmorrhage. Rest in bed is at once enjoined, save in cases where gastric or intestinal carcinoma is present; in these, only when the hæmorrhage is severe. Milk diet is strictly enjoined, and in severe cases injections per rectum of 10 to 20 per cent. calcium chloride solution. The author doubts if this effect is by reason of its being a hæmostatic, but considers it useful. In all these cases of hæmorrhage injections are preferable to purgatives to obtain movements of the bowels.

Rivalta. "On the Differential Diagnosis between Exudates and Transudates by Dilute Acetic Acid. *Policlinico,* 1905, October and November.

The author states that a sure test between exudate and transudate fluid is obtained by dilute acetic acid; it requires but a moment and can be done with a minimum quantity of the fluid to be tested. A white colouring is obtained with exudate, as also with blood serum, while the transudate is unchanged. The reaction depends on the existence of the two globulins and in spite of the existence of the globulin in transudates, the latter gives no reaction. It is true that after repeated paracentesis a slight reaction is obtained, which the author states, reasonably enough, is caused by the presence of exudate with the transudate. Blood does not spoil the accuracy of the test, unless present in considerable quantity. After death, the efficacy of the reaction is said to be lost.

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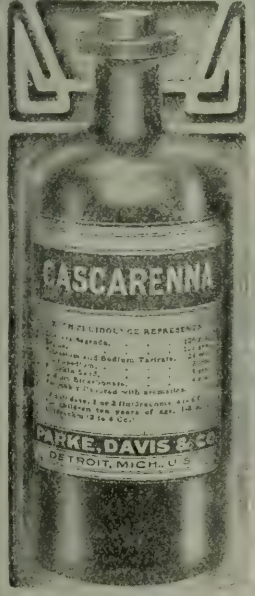

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Making Sufferers Comfortable—By W. T. Marrs, M. D. (College of Physicians & Surgeons, St. Louis, Mo.)—As has been frequently stated, the special province of the physician is to relieve pain. To do so without producing a drug habit, or in some way jeopardizing the patient's life, has always been a problem. I looked askance upon any drug or preparation purporting to be free from objectionable qualities until I began prescribing antikamnia and codeine tablets a year or so ago. The Antikamnia Chemical Company in their preparation of their tablets, by a refining process known to themselves, remove all the toxic elements from these two drugs, so that no damaging effects result. They produce only the most benign results and there is no tendency whatever to produce a drug habit. I now regard antikamnia and codeine tablets, as the ideal pain-reliever. Headache and neuralgia are not their only field of usefulness. I find that in chronic and malignant diseases where pain is a marked factor, the antikamnia and codeine tablets relieve pain and make the sufferer more comfortable. Cancer is a condition attended by excruciating pain, but I was agreeably surprised and my patient gratified at the results obtained from these tablets.

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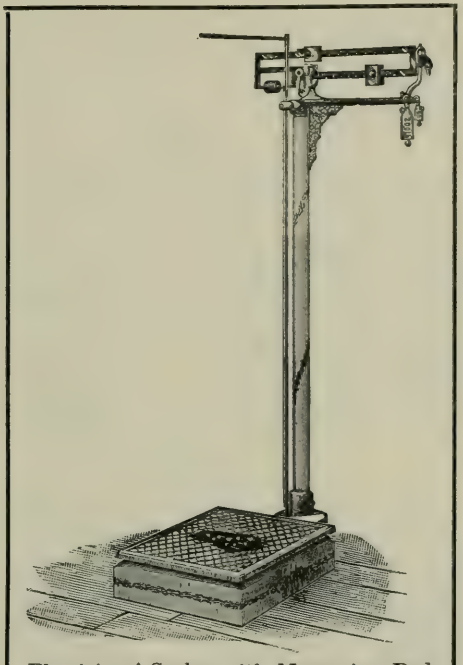

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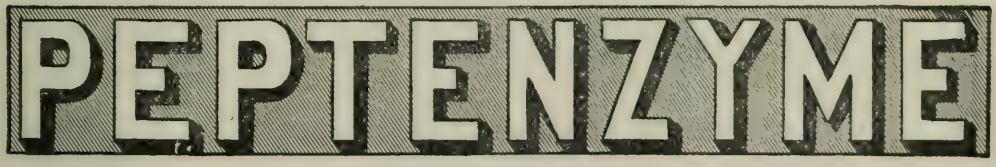

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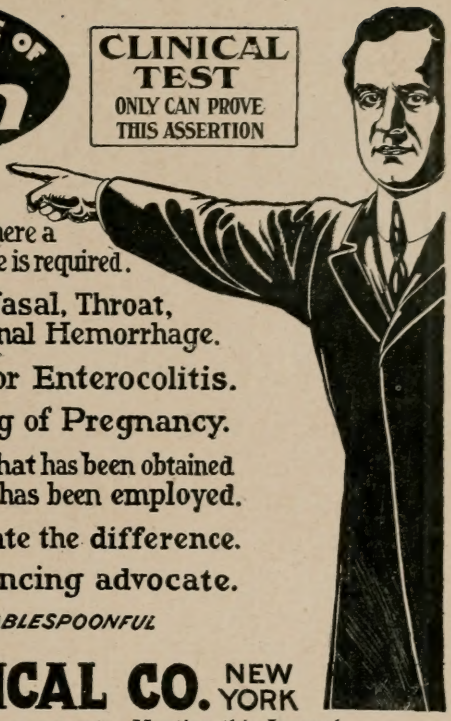

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PRINTED BY THE GAZETTE PRINTING COMPANY, MONTREAL.